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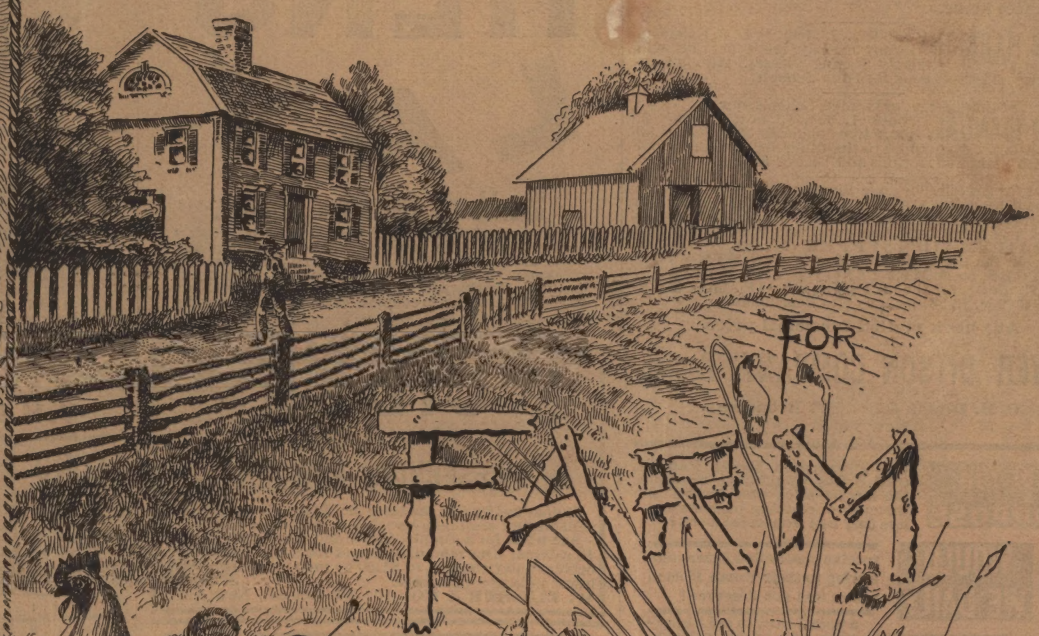

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FROM THE DAIRY TO THE CONSUMER.

ENTERED AT THE POST OFFICE AT NEW YORK, N. Y., AS SECOND CLASS MATTER.

November.

That time of year thou may'st in me behold
When yellow leaves, or none, or few, do hang
Upon those boughs which shake against the cold,
Bare, ruined choirs where late the sweet birds sang. WILLIAM SHAKESPEARE.

FARM ÷ AND ÷ GARDEN ÷ WORK

NOVEMBER, 1889.

November! What a difference in significance the word holds for the varied sections. To old New England and the North, it is a synonym for cold winds, leafless trees, and approaching winter. In the middle belt States no such chilly apprehensions exist, while to the South the word November brings a thrill of grateful enjoyment for one of the loveliest months in the year. And yet, to all it is suggestive of a closing campaign; the completion of plans laid a year since, or perhaps even longer ago, and sweet reward for the persistent toiler. Besides the material compensation, with which Mother Nature has been more profuse than ever in many sections, there is also the re-vitalization and invigoration of mind and body such as only direct contact with Nature can give. The mind is full of pleasant thoughts. The orchardist enjoys viewing the bright red apples that mean so much in money; the golden orange brings sunshine to the consumer and profit to the grower; while lovers of the vine daintily handle the luscious, bloom-covered bunches, and, reflecting on the past, sharpen their pruning-knives, determining to do still better in the future. The great wheat, corn and cotton crops, in their bulky billions, begin the transition from raw material to clean cash; most northerly at first, the line of movement descending as the year dies. What rice was not gathered, the oriole laid claim to long ago. Stockmen, from Maine to the furthest Texan range, look with satisfaction upon their herds and flocks, and begin to desire protection for them from the varying moods of winter.

About the Buildings.

Too much care cannot be exercised to shelter the manure, and to have everything snug and orderly. If close stables are used, see that they are battened and warm, but properly ventilated. A stable can be too warm. Where open sheds only are provided, take pains that these imperfect protections afford all the comfort possible. The practice of dehorning steers for winter feeding, and confining them loosely in partly-covered yards, is growing in favor. Range steers will gain more rapidly so than otherwise, but they must not be prevented from moving about the yard.

Shelter for Implements is a profitable investment. In the older parts of the country this has been proved, and it is not unusual to find mowers, etc., that have seen fifteen or twenty years of active service and are still good, because housed and cared for. But implement manufacturers in the West and South largely base their expectations of business upon the rapidity with which their patrons destroy machinery by failing to care for it.

Storage Houses or Cellars need daily attention, and where only medium late fruits and vegetables are being retarded, they need looking after more often. Especially do winter squashes require notice, that those beginning to decay may be sorted out. Keep the ventilation perfect. Careful handling is essential. Potatoes in many sections were partly rotting when dug, and frequent assorting may save much loss. Root-houses and cellars or pits must soon be permanently closed against frost at the North. But do not forget that the protection can be too close. Roots generate considerable heat and moisture, which must be allowed to escape: for this purpose place a drain tile on the buried treasure, and have it project above the soil, or use a short wooden box every ten feet. Only in the severest weather must these ventilators be closed.

Ice-Houses should be cleared ready for filling, and where there is no cold room in connection, it will pay to build one. If a dairy be kept, be sure this addition is made large enough. A new ice-house being built should be so arranged that all drainage from the ice can be utilized.

Poultry Quarters.—In snugging up every building in the homestead group, do not forget the poultry-house. And while tightening up this building and setting the glass (give the hens plenty) just anoint the perches, walls and nests with some perfume that will destroy every vestige of parasites.

The Wood-House is among the most important shelters on farms where wood is used for fuel. The farmer who means to erect one should do so this month, to utilize it this winter. A model structure can be built in a bank, and the wood sawed and split on the up-hill side, to be thrown down into the house through a window.

The Farm-House needs attention, and oftentimes improvement. Especially is this pertinent to those members of the household who do the indoor work. If the house is not comfortable, cheerful and convenient, the women feel it in all its force; much more so than the men, two-thirds of whose time is spent out of doors. Is your kitchen on the north-west corner of the house? Small wonder that your wife looks pale and pinched in the spring. Her work during daylight is mainly done here, and with the small opportunity of going into the open air which farmers' wives get, she receives but little of the freshness and good cheer which old Sol's rays bequeath to those who bask in them. Perhaps a sunny south room could be utilized for a winter kitchen. Perhaps by moving the wood-shed more sun and a better view could be obtained. How about the storm-doors? What of the bay window for which the patient housewife has been petitioning annually? Cheerfulness in a house is oftener lacking than sanitary arrangements, and the provisions for improving the home in this respect are often almost inexpensive. Good drainage, the proper location of out-buildings, a supply of untainted water—if possible brought into the house—these things at least are supposed, as a matter of course, to exist in and about the perfect farm-house. Investments at any rate of interest will prove of small account in comparison with them.

Out of Doors,

too much thought cannot be expended. In the colder States the plow must be kept diligently at work until further operations are prohibited by the frost king. Rye and winter wheat, and, further south, oats, barley and other crops, cannot be put in too soon. In remembering the fall crops, spinach, kale, and other fall and winter-growing garden vegetables, must not be forgotten. One of the greatest delicacies for many tables is the winter-grown onion. Mellow deeply a sizable bed, plow a furrow, and stand against it imperfect onions or scullions, as thickly as they will take their places. Lay another furrow against them, and fill this in the same manner, until the entire bed is thickly set. The ground must be reeking with horse manure, and be sheltered in a favored, early spot. Such a plantation loses no time, and the crop will be ready for the table, or for sale at good prices, long before other produce can be enjoyed.

Finishing the Harvest.—In but a small portion of the United States is there any hurry about harvesting the turnip crop, which grows until actually frosted. Cabbages should take the precedence. The beet family must not be exposed to too great risks. Onions are well worth taking care of this season. The raising of onion seed and sets will prove more profitable than usual, as the product is short. The chief work of the canning factories throughout the country is now over. The making of starch from potatoes, however, still continues in many places. Possibly sound tubers can be sold at better prices than to dispose of them for starch this year.

Early Winter Plans.—In whatever State the farmer's fields may lie, it will pay him to expend thought upon each. The working of the soil to enhance its cropping value and exterminate weeds can be done all winter in many sections. Where the temperature will not permit this, manure can be hauled, and every preparation made against the return of the busy season. Fence material, pea-brush, bean-poles, and the annual supply of fuel can be prepared. These things should be done as early as possible after the threshing and marketing of crops is well under way, so that early plowing, the care of stock, harvesting of ice, or preparations for sugar-making may not be interfered with. November is an invaluable month for hastening all things. It may be termed the windlass that turns the entire cycle of months.

Animal Life.

Where it is impossible to shelter stock, and feeding from the stack is imperative or customary, the good farmer will see to it that the provender is fed upon poor lands, often uplands. It is shiftless policy to spread the food on marsh-land, or on the surface of a frozen pond, as has been done in some cases. Farmers who are anxious to get ahead will as soon as possible abandon the obsolete practice of throwing stover upon the ground. The cost of feeding-racks is slight, and when the economy they inaugurate has been observed, protecting sheds will soon follow them.

Beeves lay on fat faster during this month than in January, and should be forced as fast as it is safe to crowd their appetites. The dairy cow must not be neglected. Though dry, she will need just as good rations as when in milk.

The Horses are perhaps sustaining a greater strain upon their vital forces than at any other season of the year. Threshing, plowing, and hauling to market are far from easy, especially where November is as hot as August. Sponge their backs and shoulders in brine made slightly acrid with tannin or alum. This application, especially tannin, is excellent where the skin is galled. Severely-worked animals must not be expected to pick their living after severe days of toil. Generous feeding and ceaseless care are none too good for them, and their nights should be passed upon earthen floors.

Young Stock, in all the business of the month, are apt to be forgotten. This must never be. Colts, calves and lambs beginning life at this time labor under artificial circumstances, and must be provided with additional comforts.

Breeding Ewes must soon be selected for coupling for April lambs. Where hot-house lambs for early market constitute the object, the ewes are now well along and need the tenderest care. This form of sheep-husbandry is profitable, and becoming popular. If the lambing-pens are not ready, no time should be lost. Sterile ewes can be fattened and sold advantageously through November and December, in some markets, while "spring lamb" is wanting or dear.

The Swineherd.—In all but the coldest sections it is none too early to breed the sows for early pigs. Remember that pigs even a few days in advance of your neighbors will often have less competition and a more paying sale.

Mulching.

This is a November subject worth discussion, in whatever section or climate. In the far North repeated mulching by the tramping down of snow about young trees prevents the ravages of mice and rabbits, and the use of snow in the same manner around every growing thing will prove of benefit. With the mercury at zero above the snow, it seldom falls much below freezing under the white mantle, and where the mass is compacted about peach trees, the ground in which they stand is later in thawing in the spring, and rarely opens in winter. As a consequence, the fruit buds are seldom or never damaged. In many successful vineyards, good crops are directly traceable to the protecting influence of the snow. A mulch of stones about many fruit trees, vines and shrubs is of incalculable benefit during the heated term, and the mulch which many strawberry fields require is best put on a little later, after the ground hardens by frost. Where perpetual sunshine wins blossoms from the earth all the year, the benefits of a mulch for protection against drought, and for fertility when decayed, are beyond computation. In severe climates, mulching the meadows with strawy manure coaxes from them a fuller money product the following season. Indeed, the late fall top-dressing of mowings may be quite as valuable as a mulch as for its supply of plant food.

MILK SUPPLY OF THE GREAT METROPOLIS.

Most of our large cities draw their milk supply from vast areas of farming territory. In New York, the greater portion arrives over the railroads. One of the sweetest and heaviest caravans so freighted comes down the Harlem Division of the New York Central and Hudson River railroad, from far-famed Dutchess county. For a century the thrifty farmers in that section have bought all the good cows brought into the region, believing it cheaper to do this than to raise them, but the supply was never large enough. Now, many of the more progressive are rearing excellent graded stock from the finest thoroughbred sires, while not a few already have thoroughbred herds. These men have learned to make more milk during the winter period of high prices than for the glutted summer market, with its wretchedly low values. The amount of milk furnished by this section and its vicinity, compared with other localities, is graphically shown by the following chart, while the succeeding table shows the totals of the supplies of milk, cream and condensed milk:

Housatonic, [redacted]
Via New York, New Haven and Hartford Railroad.

Dutchess, [redacted]
Via Harlem, Northern and Hudson River Railroads.

Orange, [redacted]
Via New York, Lake Erie and Western Railroad.

Delaware, [redacted]
Via New York, Ontario and Western, and West Shore Railroads.

Central N.Y., [redacted]
Via Delaware, Lackawanna and Western Railroad.

New Jersey, [redacted]
Via New York, Susquehanna and Western, and N. J. Central Railroads.

Long Island, [redacted]
Via Long Island Railroad.

RECEIPTS OF MILK, ETC., AT NEW YORK, IN CANS OF FORTY QUARTS.

MONTHS IN THE YEAR 1888.	MILK. (Cans.)	CREAM. (Cans.)	COND'SED MILK.
January	447,620	5,135	6,421
February	443,477	5,416	6,098
March	425,249	5,670	6,098
April	463,112	8,742	6,127
May	518,683	14,251	6,617
June	564,230	22,559	6,435
July	530,207	17,400	7,415
August	521,033	15,940	6,737
September	419,187	8,264	5,521
October	480,214	5,847	5,735
November	471,762	6,777	6,064
December	477,789	6,179	5,882
Totals in 1888	5,822,563	122,180	75,150
1887	5,663,210	110,688	75,029
1886	5,268,455	100,380	77,103
1885	4,930,459	94,868	77,208
First eight months of 1889	4,069,152	102,227	52,060

One of the largest milk-shipping stations in the world is at Pawling, in Dutchess county. Here the three-hundred-acre farm of Mr. Ira W. Hoag is a type of one style of milk-farming. Although on Croton Head, almost among the clouds, the land is under high cultivation. The tendency on all these milk farms is toward improvement of soil where much grain is bought, to compensate for the plant food carried off in the milk. Of course farm teams are indispensable, and a model stable for them is none too good. The entire set of farm buildings is fully as complete and convenient as many more costly structures, as may be inferred from the barn shown in the upper right-hand corner of the frontispiece. The storage capacity is one hundred tons of hay, besides straw and stalks, and the granary contains fifty tons of bran. The cow-barn has accommodations for thirty-eight head, the stable being thirty-six by seventy feet, with a feeding floor twelve feet wide, shown in the upper left-hand corner of the illustration. The cows are watered, as they are fed, without being loosened from their places, during stormy days.* There is another stable full of box stalls, for many cows are raised. The pumping and grinding are done by a Halliday windmill. Besides making 100,000 quarts of milk annually, Mr. Hoag is an originator of choice potatoes, having at present over 100 varieties. One of the ladies of his household has charge of an apiary of Italian bees. A thorough farmer, Mr. Hoag is not blind to the benefits of tile drainage and has two-and-a-half miles of tile below the surface of one field.

Another typical dairyman is Mr. Theodore Wheeler, of the Dutchess Valley Stock Farm of four hundred and fifty acres. The homestead is a large, old-fashioned, and generously-comfortable home, near which are tastefully grouped fine stock- and hay-barns, a good idea of which is given in the engraving, in the lower right-hand corner of the picture on the first page; then an annex of equal size, the whole nine hundred acres being under Mr. Wheeler's direction. Here, from one hundred and fifty gentle Jerseys and their grades, 1400 quarts of milk are made daily. Though many cows give larger quantities, few furnish such richness as the Jerseys, and nothing so well pleases the proprietors of the Murray Hill hotel, who take nearly half of the production. The rest of it is set for cream, most of which is consumed in the same market. Here, as on other farms where the choicest product only is desired, no ensilage, brewers' grains, or other fermented foods are given to the milch cows, but only the best of bran, corn, oats and cottonseed meal is fed. Fully two hundred tons of these stuffs are consumed annually on this farm alone. The hay crop aggregates four hundred tons, and the grain thirty acres. Great quantities of sweet-corn, which is allowed to ear, are also fed. One hundred acres of meadow-land have been reclaimed from swamps by tile, at great expense, and many carloads of New York city stable manure have been used.

After milking, which is always done in the stable away from flies and odors, the milk is strained and placed in eighteen-quart Cooley cans, which are submerged in ice-water, at an even temperature of about 42° in the creamery. A corner of the milk-room is shown in the engraving, with a cream-can covered with its protecting jacket. The skim-milk is fed to calves and pigs. Such a system involves a consumption of much ice, and 1000 tons are stored in three houses, which have sixteen-inch walls of charcoal and dead-air spaces. Characteristic of the Hudson Valley, tenant houses relieve the farm-house from the work of boarding the help, there being on this farm seven such tenements, in which fourteen employes are made comfortable. Each house is conveniently arranged and has a garden, wood-pile, cow, and pig. Thus situated, the farm-hands are seldom discontented.

Holsteins and their grades are largely kept by those who ship to the general market. Mr. T. J. Arnold has a fine herd, and feeds a ton of grain per head per annum. But he is a shrewd calculator, and hearty believer in farming, and is one of those who make the business pay. Mr. C. Emery Baker† feeds about as heavily, giving eleven pounds of bran daily in one feed to each cow, if in full milk, and averaging 100,000 quarts annually from his herd of fifty or sixty cows on two hundred and fifty acres.

But the milk business, as a whole, does not pay the farmers. The supply is too large, and the price two small. The prices have been gradually declining for twenty years past, as the following figures will show:

WHOLESALE PRICES OF MILK FOR 21 YEARS IN THE NEW YORK MARKET.

The Prices (in cents per quart) Received by the Producers, at their Local Shipping Stations in Each Month During These Years.

Yr.	Apr.	May	Jun.	July	Aug	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar	Total	Mo Av
1868	4½	3½	3	3¼	4	4	5	6½	7	6	6	5½	58	4.83
1869	4½	3½	3	3½	4	5	6	6	6	5	5	4½	56	4.66
1870	4	3½	3	3⅝	4	4	6	6	6	5	4½	4	53⅜	4.47
1871	4	3	3	3	3	3	3½	5	5	4½	4½	4½	46	3.83
1872	4	3	3	3	3	3	4	5	5	5	4	4	46	3.83
1873	4	2¾	2⅜	3	3	3	4	4½	4	4	4	4	43	3.58
1874	3¼	3	2¾	3	3	3¼	3⅜	4	4⅜	4	4	4	42⅜	3.56
1875	3½	3	3	3	3	3	4	4	4½	4	4	3¾	42½	3.54
1876	3	3	2½	3	3	3	3½	4	4	4	3½	3	39½	3.29
1877	3	2½	2½	2½	2½	3	4	4	4	4	3½	3	38½	3.20
1878	3	2	2	2¼	2¼	2½	2½	3	3½	3	2½	2½	30¾	2.56
1879	2½	2	2	2	2	2	2½	3½	3½	3½	3	3	31½	2.62
1880	3	2	2	2½	2½	2½	3	4	4	3½	3½	3	35½	2.95
1881	3	2	2	2	2½	3	4	5	4½	4	4	3½	39½	3.29
1882	3	2½	2½	2½	3	3½	3¾	3¾	4½	4½	3¾	3¾	40½	3.37
1883	3	2½	2½	3	3	3½	3¾	4½	4½	4½	3¾	3¾	41½	3.45
1884	3½	1½	2¾	3	3	3¼	3½	4	4	3½	3½	3	39½	3.29
1885	3	2½	2¼	3	3	3	3	3½	4	3½	3¼	3	37	3.08
1886	3	2	2	2½	2½	2½	3½	3½	3½	3½	3	3	34½	2.87
1887	3	2½	2	2½	2¾	2½	3	3½	3½	3¼	3½	3	35	2.91
1888	3	2½	2	2¼	2⅜	2½	3	3¼	3⅜	3	3	3	33⅝	2.80
Av.	3.36	2.61	2.50	2.79	2.91	3.10	3.77	4.30	4.40	4.04	4.07	3.55	41.18	3.43

The average price per quart for the whole year during the first half of the period was 45.9 cents, against an average of 36.39 cents during the last ten years. This is a shrinkage of twenty-one per cent, while the shrinkage on the basis of last year's price is still greater—twenty-six per cent.

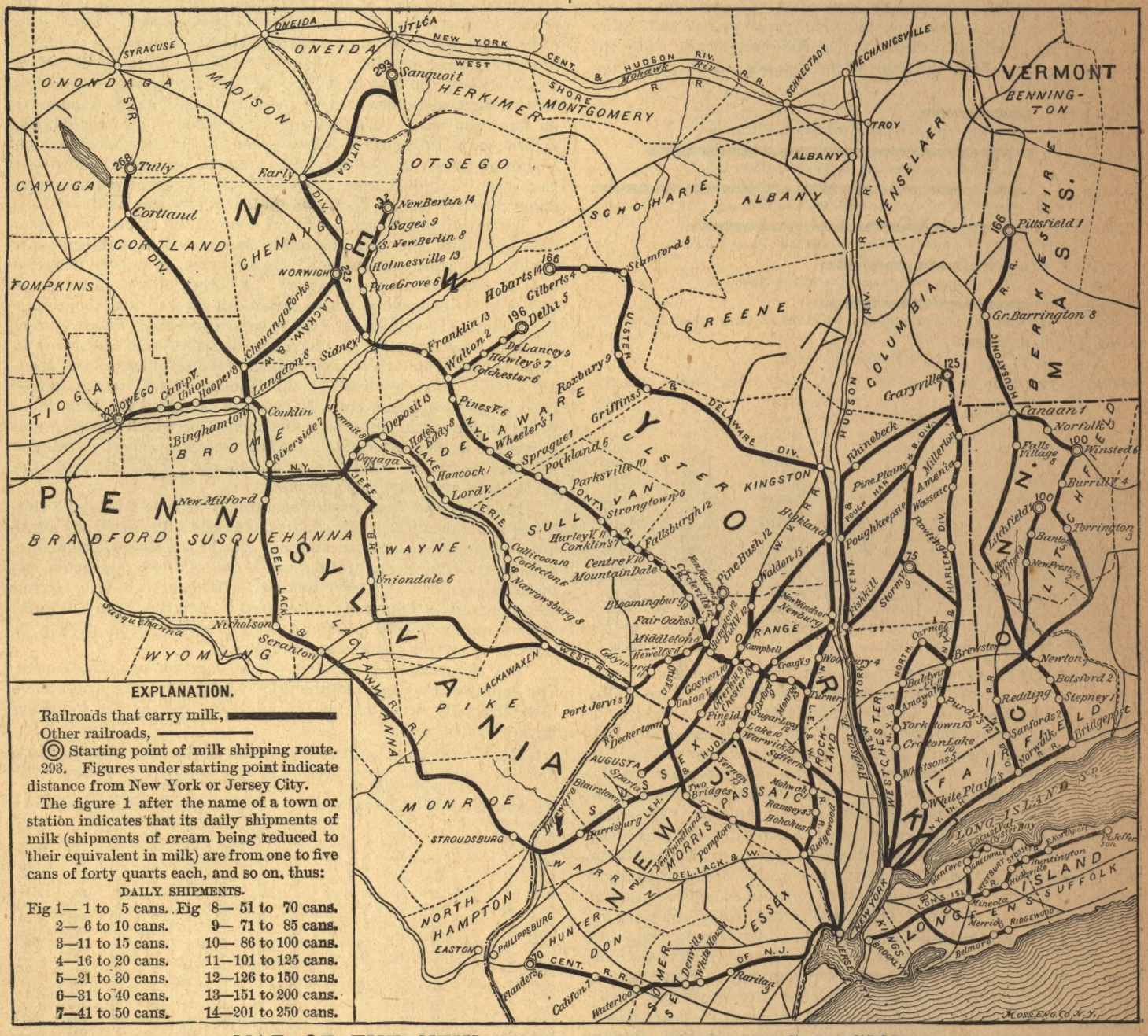
What so startling a decline in values means can be better appre-

*The device can be easily constructed. The lumber must be eight inches wide and planed on one side. Nail two boards together at an obtuse angle, and a three-cornered piece in the end of each length. A piece of strap-iron is attached to the ends and middle of each length, and reaches to a staple half way up the stanchion, where it can swing. The troughs are also provided with legs. When the water is turned into the highest trough at the head of the stable, through a hose, the cows block the troughs with their noses, and drink in turn the whole length of the stable until satisfied. Then the trough is raised on its long strap-iron hinge, and takes its place by means of weights and pulleys directly over the then open mangers. The troughs are so nicely balanced that a ten-years-old boy can raise and lower them, and do all the work. The pulley-ropes run from the drinking-troughs through wheels over the manger and in the back part of the stable, and are connected with heavy stones. When the troughs are overhead, the weights rest on the floor, close to the siding behind the drops. The entire cost of this water system was $25.

†Mr. Baker, like most New York dairymen, packs a large amount of ice each winter. His spring-house, where the milk is cooled, is as near right as it can be. The milk, on being drawn, is first placed in a large tank in the bottom of the house, and cooled for twelve hours with spring water only. At the next milking these cans are placed in another tank, with ice, and made still colder, while the warm milk again occupies the spring.

ciated by reflecting on the magnitude of the interests it affects. The decline has been wholly on the farmers' end of the bargain; consumers pay about the same prices as ten years ago, while contractors and peddlers make the same, or larger, profits. The monthly receipts of milk in 1888 ranged from 425,250 cans (of forty quarts each) in March to 564,230 cans in June, averaging 485,213 cans per month, and aggregating 5,822,563 cans for the year. The receipts of cream were, 122,180 cans, and of condensed milk, 75,150 cans, these being equal to 1,099,000 cans of whole milk.* It is also estimated that about 1,500,000 cans of milk are annually received at creameries operated by New York milk-dealers. The total receipts for the year are thus placed at 8,481,563 cans, or 339,262,520 quarts. The average price received by farmers last year was 2.8¼ cents per quart, making their total income from this source $9,584,166. It is customary to roughly estimate three cents per quart as the average price, but while this is only a fraction more than the actual price last year, that fraction represents nearly $600,000 taken from the farmers' pocket. If the producers received the same average price that they did from 1868 to 1878, they would get about three and a half million dollars annually more than they now do. The consumption of milk in New York increases about five per cent annually, as shown by comparisons of the receipts of the last four years on the preceding page.

Nearly 200,000 cows are required to produce the milk supply of the great metropolis, worth about ten millions of dollars. The old allowance of two acres per cow per annum for hay, and three acres for pasture, or five acres per head, is probably too high in this case, owing to the number of brewery-fed and stable-kept cows. If we



MAP OF THE NEW YORK MILK SUPPLYING REGION.

* The following table gives the total receipts over the principal routes in each month of 1888, condensed milk and cream being included in their equivalent of whole milk.

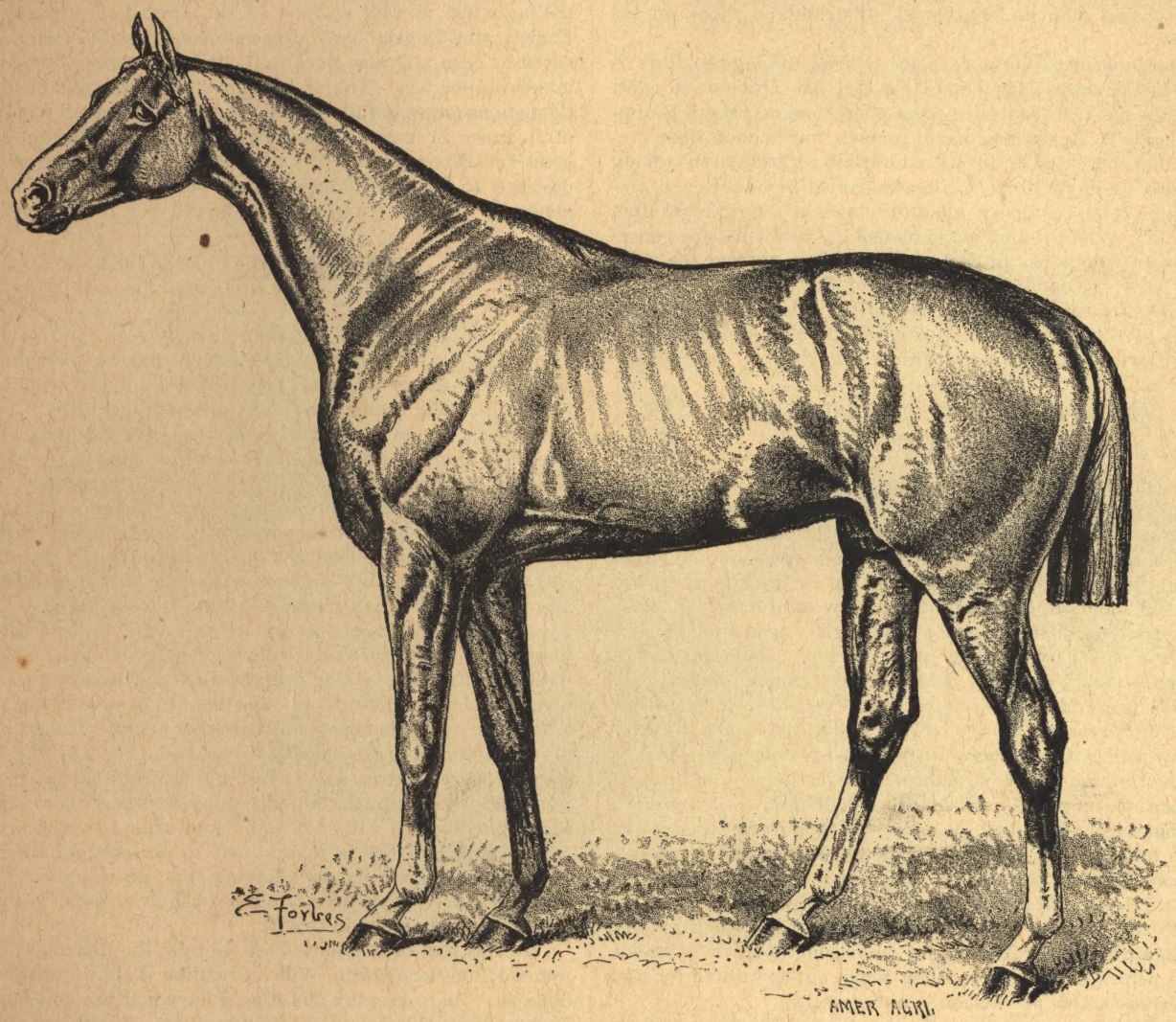
Name of Railroad.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Totals.
New York, Lake Erie & Western,	133,758	145,350	134,281	139,393	157,391	180,248	169,372	165,827	141,159	125,173	135,504	135,607	1,763,063
New York Central & Harlem,	98,832	91,398	90,620	89,289	94,438	91,466	85,472	81,773	78,120	88,366	92,245	100,090	1,082,109
New York, Ontario & Western,	45,339	43,840	46,797	54,145	69,882	87,449	77,500	81,950	52,872	54,296	57,107	51,797	712,674
New York, Susquehanna & Western,	42,909	42,420	42,928	50,160	59,644	70,877	65,285	62,248	55,499	45,381	47,185	45,285	629,821
New York & Northern,	39,050	38,961	36,354	35,665	39,829	51,190	39,140	36,094	34,437	37,000	32,231	34,971	454,922
West Shore,	40,659	39,414	47,439	53,520	61,816	59,099	42,500	51,252	40,024	44,073	37,922	40,729	638,447
New York, New Haven & Hartford,	34,289	34,970	25,300	28,710	35,000	29,950	30,080	30,000	20,361	30,000	24,271	25,043	347,974
Long Island,	12,664	11,824	10,940	11,940	12,662	15,000	11,500	10,705	10,881	12,310	12,013	12,416	144,855
Homer Ramsdell Transportation Co.,				23,934	36,211	49,921	42,378	40,564	34,369	28,525	29,568	23,531	308,941
Delaware & Lackawanna, Morris & Essex Div.,	15,200	14,000	13,000	14,000	14,750	31,250	29,500	28,750	31,000	28,000	26,000	26,000	271,450
New Jersey Central,	17,100	15,000	13,200	14,700	16,400	18,950	18,500	17,000	16,250	16,500	16,250	16,125	195,975
Brought in by Dealers,	21,600	20,100	17,500	18,000	20,000	22,000	21,000	20,000	20,000	20,500	20,000	20,000	240,700
Other Sources,	4,000	3,700	3,000	4,000	5,000	6,000	6,000	5,000	5,000	5,500	5,000	5,500	57,700
Totals, (in cans of 40 quarts each)	505,400	500,977	481,359	537,456	623,023	715,400	638,227	631,163	539,912	535,624	535,296	537,094	6,848,631

reckon an average of only four acres per cow, worth fifty dollars per acre, the real estate involved represents a capital of forty millions. These two items alone thus represent an investment of $50,000,000. Any extravagance in the estimates is more than offset by the horses, implements, buildings, and other appurtenances of the dairy farm.

According to many of the best-informed judgments, this vast investment pays no dividends, the money received for milk being hardly sufficient to pay the bare cost of production. We are speaking now about the business as a whole; only the best farmers, or those who have special contracts for their milk, are prosperous. Two causes lead to this result: First, and most important, the control of the market by middlemen; second, poor management on the farm. The latter can be most readily improved; the correction of the middleman difficulty involves a combination of producers to limit shipments to market demands, to control the distribution to consumers, and to work up the surplus milk into butter and cheese. After repeated unsuccessful attempts, an organization that aims to accomplish these reforms has been started on a firm basis. It is called "The Union of Milk-Producers for the Supply of the New York Market." Charles R. Minor, Oxford, N. Y., is the president, and Walter B. Pierce, Chenango Forks, N. Y., the working agent. Local sections of the Union are being organized at all milk-shipping points. The organization is steadily growing, and is destined to become the needed power to reform existing abuses, in a manner of which space forbids a discussion.

Some of the milk trains start at points nearly three hundred miles from New York or Jersey City. The accompanying map (the first of its kind, prepared at great expense of labor for the AMERICAN AGRICULTURIST) shows the principal routes over which milk is brought to the city, and gives a striking view of the extent of territory involved. The milk is all (small lots of bottled milk excepted) shipped in cans containing forty quarts. These are brought to the depots by the dairymen, the cars are loaded in the afternoon, and the fast-running trains reach New York or Jersey City early in the morning. On nearly all the long routes the milk is shipped in refrigerator cars and packed in ice. As early as four o'clock the peddlers arrive with wagons of empty cans, which are placed on the platforms, and the wagons filled with cans of fresh milk. The central figure in our frontispiece illustrates this early scene at the Harlem milk depot. These peddlers of milk shipped in open cans (there are thousands of them) do the bulk of the business, though the best family and hotel trade demands milk direct from well-known dairies in sealed cans or bottles. Some milkmen have a large number of delivery wagons, with one or more stores, refrigerators, butter-factories, etc. Several of these have united in a so-called Milk Exchange, and monthly go through the form of fixing the price of milk to producers. The Exchange price is much advertised, but the bulk of the milk is sold outside of the Exchange, being consigned direct to peddlers, with whom the farmer has made the best terms possible. What milk remains on the platforms in the milk depots is sold at auction, often for a cent per quart when the supply is large, while in a dearth of milk it has brought five dollars a can or even more. Consumers pay from six to ten cents per quart according to quality; the bulk sells at eight to ten cents.

The Board of Health closely watches the peddlers. Last year it made 35,415 inspections and examined 46,000 samples of milk, destroyed 12,800 quarts of adulterated milk, had 450 persons arrested for selling impure milk, and secured the imposition of 13,047 fines.



EL RIO REY.

EL RIO REY, THE WONDERFUL COLT.

We esteem ourselves as unusually fortunate in this issue in having it in our power to place before our readers a spirited portrait of the great two-year-old race-horse of 1889. El Rio Rey is a chestnut horse with a good deal of white marking. He is one of a renowned family; the offspring of Norfolk, from Marion. His elder brother, the Czar, died a few months ago, having given promise of developing into a magnificent animal. Their still older broth-

er, Conqueror of Norfolk, was a superior race-horse, but had to be retired early in his successful career, as the legs were not strong enough to bear the ordeal of training, his body being large and muscular far above his years. This fault of nature does not exist in El Rio Rey, who though fully as heavily built as his illustrious brother, has legs of enormous strength, more than equal to all that judiciously can be asked of him. Up to date this superb horse has never been beaten. One of his greatest victories was the taking of the Eclipse stakes won at the new track in Westchester Co., N. Y., when with a large field of the best two-year-olds in America in his company he ran clean away from them; even as the Teutonic could pass a coal barge. Again, a week later, he started in a large field, and owing to the carelessness of his jockey, was when within a few strides of the winning post overtaken by that brave filly Ruperta. The horse's instinct rather than the rider's judgment, however, saved the race, for no sooner did El Rio Rey perceive that he was being passed than he lengthened his stride and shook off his competitors.

The great merits of her sons places Marion among the stars of American brood mares; for while Ann Fief has Tremont to exalt her, as yet she has not dropped another phenomenon. Maud Hampton and Maggie B. B. are matrons of renown, but none in their produce have done better than Marion, whose last addition to the racing world is also a colt by Norfolk, already named Rey del Rey, a pretentious name for a youngster, albeit he comes of a right royal line.

El Rio Rey was bred and is still owned in California, the generous climate of which has proved so favorable a nursery for thorough-bred horses. One cause, doubtless, of the wonderful development of the California-bred horse, is that the evenness of temperature allows of constant open-air exercise, and this secures a good constitution, with a full-developed frame.

WINTERING CABBAGE ON LONG ISLAND.

C. L. ALLEN.

The usual method practised by market-gardeners, and which is at the same time the most satisfactory and simple, is to plow out a double furrow, going forward and back in the same place. This will make a track sufficiently wide for three rows, one on either side and one in the center, the latter resting on the other two, the heads sinking about one-half their depth between the former. They should be placed roots down, and at the angle a head would naturally lie when pulled up and laid upon its side. The heads should be taken up after a frost, and before severe freezing commences. After the heads are intrenched, have them exposed as long as they are safe from freezing, then cover to about the depth of three inches with soil, without straw or any other protection. This is best done by running the plow on either side of the row, and throwing the furrow over them. This will be sufficient until there is a prospect that winter is to set in in earnest, then cover at least a foot with earth and leave them for the winter. It is better to put in a wisp of straw in every thirty feet of trench for ventilation, in case of a mild winter. After they are well frozen in, say frost in the covering to the depth of three or four inches, the trench may be protected against further freezing, by a covering of straw or stalks, in order to permit of the heads being taken out as wanted for use. For seed purposes, this precaution is unnecessary.

Cabbages to keep well through the winter should be stored away before they have fully completed their growth. They then keep on growing during the winter, and in the spring will be much larger than when put away, and far more healthy. Last spring we took heads from the trenches more than three times the size they were when put away, perfectly sound and tender, while many of the matured heads rotted.

WILD RICE — ITS SEED AND FORAGE.

J. O. MARING, MINNESOTA.

One of the indigenous grasses of North America, the seed of which from time immemorial furnished food for wild fowls, and scarcely less wild Indians, has recently come into favorable notice for its valuable qualities. The plant referred to is the wild rice *Zizania aquatica*. Long before the advent of white men, the Indians were accustomed to push their canoes through the waters of the dense rice swamps, and pausing under thick clumps beat the ripened grain into their canoes. In this way large quantities were harvested for times of need. The plant abounds in the lakes and sluggish streams from the middle region to Canada and the Northwest, growing luxuriantly not only on the low, wet banks, but also on the muddy bottom where the water is several feet deep. Wild rice is an annual that ripens its seeds in the fall, dropping them into the water, where they germinate, the young plants reaching the surface during the first half of June. It grows very rapidly in one to eight feet of water, ripens late in August or early in September, and attracts great flocks of wild ducks and other wild fowls to the place. It should be planted in the fall in the months of September or October broadcast, from a boat, in two to six feet of water where there is a mud bottom. It has been successfully planted in November and December, but succeeds best when planted earlier. As an attraction for wild fowl, it cannot be equalled. A friend writes, "It brought me more nice meals than if I had butchered the fatted calf." Near the sea coast it is the favorite food of mud-hens and rail-birds of all kinds. In large ponds and lakes it purifies the water and affords a refuge for small fry from the large fish, as well as food in the animalculæ upon its stalks. For planting in fish-ponds, it is especially desirable, as it is greedily eaten by carp. It also does well along the shores of marshes, and makes a good hay. The stems and leaves are valuable as a forage plant in swamps and inundated lands. Stock of all kinds are fond of it, green or cured. The cows give more milk and the horses grow fat. They eat as freely of it as of young sugar corn. It seems destined to be an article of great value as soon as it becomes generally known. Two crops can be cut of it in the South.

STORING SWEET POTATOES.

BENJAMIN BOYD, MISSOURI.

I have been growing and sprouting sweet potatoes for eleven years, and my method of harvesting, storing, and keeping them is as follows: Boxes are made two feet long, one foot wide, and one foot deep. The bottom and ends are of inch boards, the sides of slats, with spaces a quarter of an inch between for ventilation. Each box contains one bushel, allowing for shrinkage. The dimensions of the boxes should be very exact, so they may be set one above another, without projecting beyond the general pile.

The time to harvest the sweet potatoes is on dry, sunny days. Take the boxes to the field and fill them nearly to the top, taking care not to let any project above, so as to become bruised by a superincumbent box. They are hauled in and stored at once. My sweet potato house is sixteen feet square and eight high in the clear, of hewn logs, made perfectly tight by being pointed inside and out with mortar. The ceiling is of dressed and matched pine lumber, upon which is spread a foot of sawdust, to keep out frost. There is a fireplace on the north side of the store-room. The potatoes, having been sorted in the field, are brought in, and the boxes are stacked up, the lower one being a foot from the earth floor. A small fire is kept up in damp and rainy weather, to dry the potatoes thoroughly before winter sets in; and after the weather becomes frosty, sufficient fire is maintained to preserve a temperature of about sixty degrees, never allowing it to go lower than fifty. In this way I have kept three hundred bushels of sweet potatoes, with a loss of less than one in twenty.

In this part of the Southwest we raise the Red and Yellow Nansemond, Southern Green, White Brazilian, Yellow Jersey and Black Spanish. As to keeping qualities, I have had the best success with Yellow Nansemond and White Brazilian. In all cases it is important to store the varieties in separate boxes, as mixed lots do not command good markets.

NUGGETS.

Many a man may double his physical capacity by strengthening his mind somewhat.

Without cleanliness in the dairy, all efforts to produce the best butter or cheese are vain.

Generally, he who sells hay from his farm pays a high rate of interest for the money he gets.

For the nutrition of live stock and the conservation of soil fertility, grass is the world's royal crop.

Excessive growth or fattening is at a great expense of food. Better a continuous good growth, and no cramming stages.

The man who buys good animals and gives them scrub feed, ought, to be consistent, not to hoist his umbrella in a rain-storm.

The farmer must have a long bank account who can afford to breed immature animals, or to keep animals for the shambles after they approach maturity.

THE DORKING FOWLS.

B. HOLMES, JR.

Next to the Game fowl the Dorking is probably the oldest pure-bred variety known to fanciers of to-day. Their origin is still shrouded in mystery; the weight of evidence showing that they were introduced into England during the old Roman occupation of that country. From history we learn that they were then the favorite fowls for the table, which position they have held ever since, even up to the present day. The descriptions given of them by the old writers differ materially in colors and markings from the breed as known now, being described as "red" with various markings, but all concur in naming the fifth toe, which is still one of the distinguishing marks of the breed. They are large birds, attractive in appearance, showing to the most casual observer their aristocratic descent, and have a general "pull-off-your-coat-and-roll-up-your-sleeves" look of business and utility. They have honestly earned and retained their position as the "king" of table fowls; their flesh being very firm, fine-grained, tender and of delicious flavor. The carcass possesses a very large percentage of palatable flesh to total weight, the bone and offal being very small and light for so heavy a fowl; the meat on the breast and thighs is particularly heavy and plentiful. They have never been considered very prolific, though in late years certain strains have been produced which are excellent layers, their eggs being large, clear white in color, and of fine flavor. This is only another instance in corroboration of the generally accepted fact of all breeds, that there is more in the strain than in the breed, as concerns the laying qualities.

The general characteristics of all varieties of the Dorkings are a large but well-formed and not coarse head, rose comb in the whites, single in the silver grays, and either in the colored; neck so heavily feathered as to look rather short; abundant flowing hackle; body very long and deep, with a rectangular appearance when viewed from the front; tail very large, with long flowing sickles; thighs heavy and so thickly feathered as to show very little shanks; short, with good bone, but not excessively heavy, of a white or pinkish shade, and with a large fifth toe which turns upward with a slight curve and not resting on the ground in walking. The weights required in our shows are: cocks, seven-and-one-half to nine pounds; hens, six to seven-and-one-half pounds. English authorities give weights several pounds heavier for both sexes. At one time the chickens were considered tender and hard to raise, but that has largely been overcome by judicious mating and handling and on suitable ground. A light sandy soil is the best for Dorkings of any age. The chicks can probably be raised as successfully as most other breeds. They have never been held in as high favor in this country as in England, their reputation as moderate layers probably being one reason why our fanciers have not taken them up and pushed them to the front, but within the last two or three years some of our most enterprising fanciers have imported a good many from the best flocks in England, and they are gradually working their way into the esteem of the American public. We confidently expect to see them take the place they deserve to hold in the ranks of pure-bred fowls, in a very few years. The rank and file of poultry raisers are paying more attention to pure-bred stock in the poultry line, year by year, but they want to see usefulness in what they take hold of, as well as the pure blood, and this they will find in the Dorkings. The highest type of the white and colored breed is shown in our engraving.

DORKINGS, WHITE AND COLORED.

Corn-Husking.—Husking corn in the field deprives husking time of much of its festive character, and if the day happens to be a cool one, the task is far from pleasant, so far as the fingers are concerned. But the large crops now raised, especially at the West, make husking in the field far more expeditious than the old method of breaking the ears from the stalks, throwing them into a wagon and conveying them to the barn floor. A husking bee is called by inviting the neighbors, and there is both work and sport, especially if a husker finds a red ear—which entitles the finder to a kiss from the girl of his choice. Old hands have been known to take a red ear with them, which at proper intervals is produced from the pocket as a "find." However the corn may be husked, the seed-corn should be selected at husking time. Select good, well-shaped ears, free from any mixing with other varieties, well filled out to the very end, with regular rows the whole length. Having fixed upon the standard, select seed ears that come up to the standard. By taking pains in selecting the seed, one can in a few years establish an improved variety. If the seed corn is selected in the field, the seed-ears can be taken only from stalks that bear two good ears; an observance of this will increase the yield to the acre. When a desirable variety has been established, care must be exercised each year to preserve it in perfection. Save an abundance of seed, as it is often needed for replanting. Braid the husks of the seed ears together to form bunches to be hung in an airy place.

CALIFORNIA FRUIT CROP STATISTICS.

CHARLES H. SHINN, CALIFORNIA.

Although it has been part of my business for a number of years past to keep reasonably well posted upon the growth of the State, yet, I confess the annual statistics of our fruit crop, and the estimates which must be made respecting the future, are a surprise to me. The total crop of deciduous fruits produced in California during 1888 was valued at about $8,000,000. In round numbers, we dried 115,000,000 pounds, canned 65,000,000 pounds, sent out of the State, in a fresh form, 41,000,000 pounds, and utilized for home markets, or allowed to go to waste, 54,000,000 pounds—a total of 275,000,000 pounds of green fruit product. This seems an enormous amount, but as the "Annual Review" edition of the *Fruit Grower*, in which most of the estimates given in this article appear, has very pertinently said, "The importation of foreign prunes alone into the United States in one year represents an equivalent of 270,000,000 pounds of fresh fruit." California has only made a beginning, as yet, in the ambitious occupation of supplying the dried and canned fruit, and much of the fresh fruit, for the rest of the United States.

Considering the dried fruits of California, the shipments made from the State between July 1st, 1888, and July 1st, 1889, were 22,427,000 pounds. The Santa Clara Valley, embracing parts of the counties of Alameda and Santa Clara, furnished one-third of this, and Sacramento comes next as a shipping point. The classification is interesting: Apricots, 3,200,000 pounds; prunes, 8,000,000; grapes (not raisins), 2,340,000; peaches, of all grades, 8,600,000; figs, as yet a new industry, 175,000. If we study the entire dried fruit product, and over a term of years, we discover some remarkable changes going on. The product of dried apples has lessened by two-thirds since 1884; that of apricots has multiplied exactly sixteen fold, and the peach product nearly as much; plums have decreased by one-half, while prunes are four times greater; nectarines show the largest development—thirty-four fold, and the product of figs has quadrupled.

The raisin industry is, all in all, one of the most satisfactory ones in the State, having gone on developing with great rapidity, and having thus far rendered all who have undertaken it exceptionally prosperous. From 1873, when 6,000 boxes of twenty pounds each were produced, until 1888, when the crop was 950,000 boxes, the increase has been almost uniform, except between 1884 and 1885, when the crop sprang from 175,000 to 470,000 boxes. Classified by districts, Fresno, in 1888, produced 440,000 boxes, Riverside 225,000 boxes, and Woodland and Davisville, Yolo Co., the original home of the industry, 115,000 boxes. Large parts of the counties of Kern, Tulare, Fresno, Merced and Stanislaus are as well adapted to raisin-culture as any lands that have yet been planted, and Southern California has a large area fit for the business, in addition to that already devoted to it in San Bernardino, San Diego and Los Angeles. There are about 22,000 acres of raisin vineyard in the State now, and if necessary ten times as large an area of suitable soil could be planted. The total annual raisin crop of the Valencia and Malaga districts combined is about 5,000,000 boxes; the California crop has doubled in the last five years, and can be depended upon to grow at least as fast in the future, so that fifteen years more will probably see California producing more raisins than the rest of the world combined.

The canned fruit industry of the State, in 1876, was but 270,000 cases, twenty-four cans to the case; the pack lessened the two following seasons, rose in 1879, sank to 236,000 cases in 1880, and then developed rapidly, reaching in 1888 a total of 1,223,000 cases, representing 70,000,000 pounds of fresh fruit. The sale and distribution of this fruit, when figured upon, proves conclusively that the great sources of consumption have not yet been reached. On a basis of 100, 31 per cent of the California canned fruit goes to Missouri Valley points, 27½ per cent to Mississippi Valley points, 10 per cent to Chicago, and 5 per cent to Colorado—only about 25 per cent is sold in other parts of the country.

The citrus fruit industries are mainly centered on the orange. The lemon can be readily grown, but the trouble has been in curing and handling. When this difficulty is obviated, lemon-culture will vie with that of the orange. Of the latter, the total crop of 1888 was 9,000,000 boxes,—about half that of Florida. Taking one district, Riverside, Eastern shipments have grown from fifteen carloads in 1880-1 to 926 carloads in 1888-9. The industry of orange-culture is extending into new districts, and planting has taken a fresh start.

The industry of growing almonds and walnuts has increased rapidly. The walnut crop of 1884 was 750,000 pounds, and that of 1888 was 1,000,000, a short crop, considering the increased acreage. The almond crop grew from 250,000 pounds in 1884 to 1,050,000 pounds in 1885, but several short crops followed, and in 1888 the yield was but 450,000 pounds. A far larger yield may be expected this autumn, and the increased acreage will soon begin to produce an impression. Peanut-culture has never seemed to be permanent here, and has sunk from a yield of 750,000 pounds in 1884 to one of 175,000 pounds in 1888.

There are 150,000 acres of land in the State devoted to the vineyards, chiefly of wine grapes, valued at $45,000,000, with machinery, buildings, etc., valued at $20,000,000. This is nearly three-fold the acreage of 1879. The wine product has grown from 5,000,000 gallons in 1878 to 18,000,000 gallons in 1888. Napa leads; Sonoma, Santa Clara, Fresno, Alameda, Los Angeles and Sacramento are the other most prominent wine districts. The brandy production is already 600,000 gallons annually, and likely to increase greatly.

It will be seen that these statistics show the growth of industries, few of them more than twenty years old, and in most cases, only beginning to attract attention five or ten years ago. I can make no estimate as to the acreage planted but not yet in bearing. All such estimates are unreliable, the only "pointer" being the general statement that the sales of nursery stock in California appear to increase each year. All in all, the horticulturists of this young State have every reason to feel satisfied with the outlook.

USE AND ABUSE OF THE FARM WORK-SHOP.

Absurd things are written about the farm work-shop. The farmer cannot be proficient in half a dozen trades, nor can his son do even fairly good carpenter or blacksmith work without practice. Some people seem to think that nothing is necessary but to get the tools, and the needful skill will come with them. The absurdities written about the farm work-shop would not merit notice were they not likely to lead us too far in the other direction. It is not good policy to go to the blacksmith every time a piece of iron is to be mended, or to the carpenter to make us a bench. The charges of the carpenter or blacksmith are of less importance than the loss of time. Every farmer who owns a large farm should have at least one farm blacksmith outfit. The farmer may not find it profitable to sharpen the plows, but he should be able to weld or rivet together pieces of iron or steel; to mend chains, shanks of forks or hoes, whiffletree clips, clevices, etc., etc. He ought also to be able to make rings, links, hooks and pins. The necessary tools cost little and the skill necessary to such simple work is soon gained.

In wood many simple jobs or repairing are easily done. It is by no means certain that the farmer should not go farther in wood-working. Handles for axes, forks, rakes, etc., whiffletrees, and similar articles can probably be bought more cheaply than the farmer can make them for; but generally he can make better than he can buy, and when he counts quality he will doubtless find his own work better than he can buy. He can select the choicest timber and season it properly. It is a good practice to save the toughest, best pieces when splitting out rails or posts.

With an assortment of copper rivets, some awls, thread and wax, any strap about the harness can be joined. This much leather working is always profitable. If the farmer will give the tools to the boys, the sense of property will stimulate them to practise using them. One boy may have the carpenter tools, another the blacksmith tools, etc. If the boys choose to use their tools on rainy days, when otherwise they might rest, all right; but don't compel them to. Making this extra work of course renders it distasteful. The hint so frequently seen that with tools the boys can make or mend when they cannot do farm work, is altogether bad. If made use of, it will defeat your purpose every time.

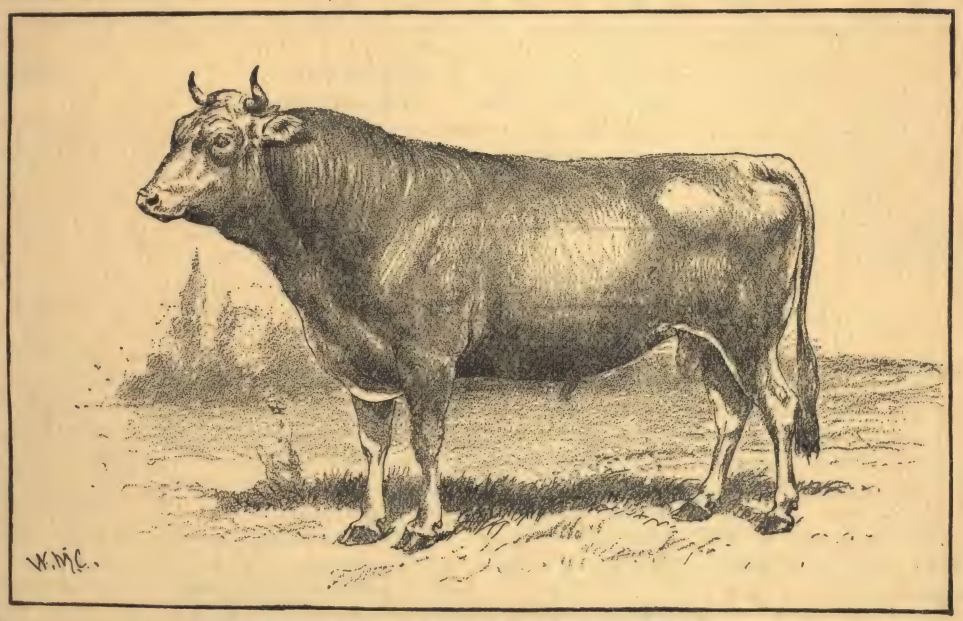
Make Ready for Hog-Killing.—Much of the hard work of converting pigs into pork is avoided by making use of various contrivances to facilitate the work. The old way of scalding in a barrel with water heated in a kettle and turned into the barrel is vastly inferior to a long scalding trough made of plank, with a sheet iron bottom. This is to be so set with stones and earth that the fire runs the whole length and heats the water very rapidly. The trough is furnished with an iron rack, upon which the hog is laid, and by means of a rope and pulleys is readily hoisted in and out upon the scraping tables. By the use of the rack the animal can be readily turned upon one side to the other.

PARTHENAISE CATTLE.

DR. A. S. HEATH.

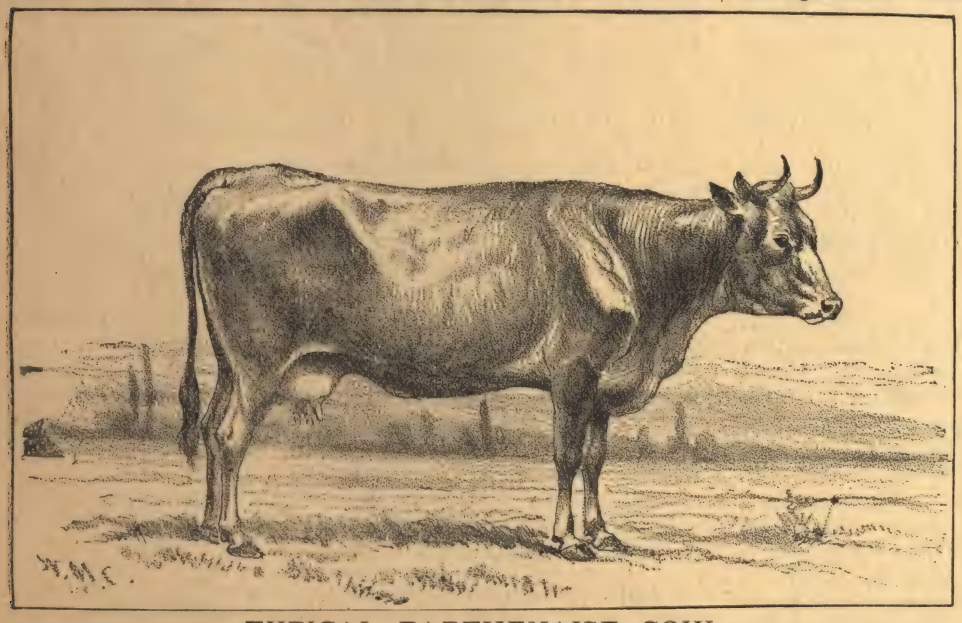
In the Department of La Vendée, in the Province of Poitou, France, is bred a race of beautiful cattle. Few breeds can claim even two special excellences, and three pronounced qualities are extremely rare. The food product should always rank first, whether it be milk or meat, and these are largely determined by the quality of the food elements. The labor product also claims attention in the several breeds of cattle, as an item in the estimation of relative values.

The Jersey has the most beautiful head, the Shorthorn the best hindquarters, the Ayrshire the broad, deep loin, the Devon compact symmetry, the Hereford large and deep body, the Charolais length and rotundity, the West Highland roundness of rib, the Holstein the greatest flow of milk, and the other breeds their special qualities. But for beauty of color the golden harvests have no richer shades than the Parthenaise, nor do any breeds of cattle show greater excellence of form, and such evenness of quality. Whether down in the fens, or up among the high, wooded sections of La Vendée, or on the rich plains about Chalet, they are always beautiful. In color, a rich creamy and mellow brown; with deep black muzzles and legs; tapering and slightly upturned waxy horns tipped black and of medium length, soft, fine coats and mellow hides, small, delicate heads, fine bones, low stature, well-balanced bodies, and level from head to tail, well-sprung ribs and broad backs. The eyes are large, liquid, soft and amiable, fringed with a fine, pearly down, surrounded by a dark rim; the muzzles also are decked with the same shade of down as surrounds the eyes, rendering these animals the admiration of writers, poets, and artists; and yet not all of these, including George Sand and Rosa Bonheur, have ever had influence enough on our matter-of-fact breeders to cause them to plant such manifold excellences upon American soil. As yet, the Parthenaise does not beautify our broad, green pastures. What shall the fine illustrations herewith of a bull and a cow do for the beautiful Parthenaise?



TYPICAL PARTHENAISE BULL.

Wintering Roots.—Root crops in general are best stored in trenches. Make trenches where water will not stand, three or four feet wide and six feet deep. The roots are stacked up in this; when two feet in length of the trench is packed, begin anew at six inches from the first stack, and so on. These spaces are to be filled with earth, so that the trench will present a full section of roots, supported by six-inch walls of earth. Finally cover the top with litter, and cover this with earth. Small quantities of roots and those for the daily supply are best stored in boxes or barrels in the cellar, covered with sandy earth; this preserves their freshness by preventing wilting. Potatoes should always be in the dark; even diffused sunlight will injure them.



TYPICAL PARTHENAISE COW.

WHERE TO LOCATE.

In the choice of location, the general farmer, the grower of grain or stock, may give fancy or inclination almost boundless range. With good roads and shipping facilities, by rail or water, these coarser and staple products of the farm may be easily and cheaply conveyed to a market. Wheat and corn, hogs and cattle, can usually find a buyer, if not the consumer's market, near the seat of production. If it is a low market, because remote from the consumer, it is at least as good, in comparison with the cost of production, as that of the near-by producer.

The market-gardener and the small-fruit grower, on the contrary, must choose a location mainly with an eye to a market where the consumer may be quickly and inexpensively reached. Other considerations are that the market must be sufficiently large and of the right kind. Communities differ in respect to filling a gardener's ideal of a good market, as much as people do in their individual characteristics. A large market is not always a good one; nor a small one necessarily poor. The markets of a large city can consume an almost unlimited quantity of fruits and vegetables, and will always do so when prices are sufficiently low. Thus, while little that is sent within will be lost for want of a purchaser, often the prices realized return little profit to the producer. Almost all shipments being on commission, the dealer will sell at any figure that will cover freight charges, rather than have stock spoil on his hands. On the other side, early produce, put upon the market in good shape, will find in the city a class of purchasers able and willing to pay well, and which cannot be found to any extent elsewhere. Also, when there is any scarcity, the prices obtained will be extremely good. The antipode of the city market is the rural village, where every one, from the school-master to the cobbler, has his little garden cultivated *con amore*, each rivaling his neighbor in the production of big cabbages and mammoth pumpkins, and where the cottage-yard and the line of the garden-fence are utilized for growing fruits and berries, for the supply of each little home.

Between these extremes lies the ideal market—the growing, thriving manufacturing town. Here will be found two classes of

customers, each equally desirable, and each supplementing the other. One class comprises the people of considerable wealth; those identified with the manufacturing and business interests of the place; who will purchase, at good prices, a limited amount of early, or especially fine, supplies. The other class consists mainly of the mill employes and laboring people, who usually are not producers at all, but dependent on the market for every item that goes upon the table. They are liberal purchasers during the height of the season, while the supplies are the largest and at the lowest price. The average of prices in such a market will be much better than in a large city. The net profit upon the same amount of sales will be better, and the work can be carried on with greater personal satisfaction. There are many such locations still without any good professional gardener, or grower of small fruits, and they constitute the very best openings now to be found for such business.

In selecting the location—especially if one is also new to the business—it is best not to choose too large a town. A place of three thousand inhabitants, if it is growing and prosperous, will afford a market equal to the usual productive capacity of a first year's garden. As the town grows, so will the gardener's appreciation of its wants, and in his operations, each succeeding year, he can conform to its growing needs to his own constantly-increasing profit and satisfaction.

PREPARING BEES FOR THE WINTER.

A. H. DUFF, KANSAS.

Successful wintering of bees depends largely on preparations made before cold weather sets in, such as uniting weak colonies, feeding, etc. The extra food must be given so early that the bees can seal up their stores. Unsealed comb during winter is not healthful food. Whatever variety of food is given them, the moisture that arises from the bees during cold weather enters the unsealed stores, and produces disease. It is far better to look to this important matter during the honey season, and prepare frames of sealed honey to supply all colonies that need feed. But, in our greed for a heavy crop, we are apt to lose sight of this, and when feeding-time comes, we buy sugar, at high prices, to supply these wants. The fact has been demonstrated, time and again, that it is cheaper to depend upon the honey source alone than to use sugar at any time. Besides, we are greatly injured by the popular idea that we feed sugar for the production of surplus honey. But, though it is cheaper and better to depend upon the natural honey source alone, yet, if we have colonies without honey enough to carry them through the winter, and no surplus honey at hand to give them, we must feed them sugar or lose them. Uniting bees, and supplying all colonies with good fertile queens, is of primary importance. As we have the advantage of movable frame hives, we should thoroughly arrange the brood-nest in every colony so that the brood shall occupy the center of the hive or combs. If a frame of brood is carelessly set on one side, the bees occupy the other side, and the brood separates. After properly arranging the hive and providing a good queen, we are ready to feed. The food will be stored around the cluster of bees. Frames of comb filled with pollen near the cluster of bees are considered injurious to bees during winter. This has been our experience, and we take particular pains to either remove such frames from the hive or place them outside of the brood-nest. Bees should not cluster on frames filled with pollen during winter. They use too much pollen as food, and it has a tendency to produce dysentery.

During this time of preparation is the best time to change the stock of bees. Good queens of all improved stock are now very low in price, and if we introduce queens now we have the full advantage of the new stock the next season, as we should not if we put off such work until the following spring, when queens cost double, or even more. Bees should have protection during winter, either by using chaff hives, or keeping the colonies under ground. But we should keep in mind that the most important thing to give them is, a good supply of sealed honey, within easy access. Many colonies of bees starve to death from the fact that the honey is all in one side of the hive and the bees on the other, while the weather is so cold that they cannot move to it. This is another reason for putting the cluster of bees in the center of the hive, and the honey on each side.

Late Harvesting.—A good farmer should know the relative tenderness of his crops. He will know that the least frost will injure some, and they must be placed out of danger, while others will not be injured by severe frosts. There was in some localities much late planting of corn, to replace crops injured by severe floods and wash-outs. It is good farming to replant in such cases if there is any chance of making a crop. At least a crop of fodder can be secured, and with a very favorable autumn, a crop of corn. It is the practice in the Western States to husk from the bundles in the field. At the East there is a demand for husks or "shucks" for various uses that makes it pay to gather the ears and take them to the barn, when opportunity for an old-fashioned "corn-husking" will be appreciated by the young folks. In husking in the field on a cold day the stalks often fail of proper care. They should be set up so securely that they will not get blown over before they are all fed out. Select the seed corn at husking time, if not done earlier; leave enough husks attached to the ears to allow them to be braided together to be hung up out of reach of rats and mice.

HANDLING MANURE IN AUTUMN.

The best practice among those not provided with abundant barn room, is to select a level piece of ground, and stack the threshed straw there year after year. The straw can be converted into well-rotted manure by using it liberally for bedding in the stables and by turning the cattle to the stack; and all things considered, this is the most profitable disposition of the straw where that not eaten by the cattle in the stack yard is converted into manure, and well cared for. The straw thrown under foot by the cattle will likely be trampled down so solidly that if left to itself it will not be converted into manure in the desired time; and part of the stack may have to be cut down and strewn over the yard, making necessary some effort to hasten the rotting of the straw. As there is no need of handling wet manure, it is advisable to have the mass stirred every day for some days before it is taken to the fields, that it may dry out. To accomplish this it may be necessary to use a manure hook like a two-pronged hoe. It may be made by any blacksmith. A better one, in fact the best for manure not wet, is to have a blacksmith bend the shank of a four- or five-tined manure fork, making a hook shaped like a potato-digger. It is sometimes difficult to make the shank hold in place. Take the length of the shank; measure back from the end of the handle this distance less one inch; at this point put a screw through the handle, having it pass through the center of the hole bored for the shank (the head and point of the screw may be filed off even with the surface of the handle); then drive in the shank with its point heated to a red heat; as the point reaches the screw it will be deflected and enlarged and will make a way for itself in the wood, getting a hold that the strength of one man will not overcome. The handle of a manure hook should be quite heavy around the shank, to give strength, and the weight is really needed there.

All the manure should be removed from the yard before the grain is threshed, that the new straw may not be stacked upon it; and the usual method of putting it upon the winter wheat ground is a good one. If strewn over the ground as it is plowed, the harrowing necessary to put the seed bed in proper condition will thoroughly fine it and incorporate it with the soil, while it will not be below the roots of the wheat. It is best to strew it over the ground as it is hauled out. This saves one handling. Hauling manure in it so fouls a wagon box that it is best to have another box for this and similar uses. This is best made of loose planks—pine, two inches thick and from nine to twelve inches wide. They are made much more convenient to handle by shaving down the ends to three inches wide. If end boards are desired, grooves can be cut in the side of the handles on the ends of the planks, and will be strong enough to hold the boards. If desired to make the box higher than the standards, and the latter are not provided with rings to receive pieces, staple rings into the planks forming the sides of the box. Passing pieces of wood through these rings will hold the upper boards in place. The lowest side planks must lie on the bolster, the planks forming the bottom of the box fitting closely inside of them.

The manure crop year properly begins in the fall; and at this time the yards, stable and sheds should be made clean and ready for the next year's crop making.

Fattening Animals.—Only a portion of the food of an animal is stored up as fat; a large share is expended in keeping the animal warm. If the weather be mild, much less of the food will be required to keep up the heat, and more will go to laying on fat. There are two kinds of food elements—heat producers and flesh formers. Every farmer who fattens animals, whether beeves or poultry, should study the composition of food, that he may feed most profitably.

SUBURBAN COTTAGE COSTING $3,500.

We present herewith the elevations and floor plans of a village or suburban cottage of chaste and unpretentious design, cheery aspect, and very convenient arrangement. It was designed by David W. King, architect, New York. In general architectural appearance it is characterized by simplicity, attractiveness arising from harmony and elegance of proportion, rather than from elaborate ornamentation. It is free from the multiplicity of gables and general "crazy-quilt architecture" so noticeable in many of the so-called "modern cottages" which disfigure rather than ornament so many rural and suburban situations.

The cellar, which extends under the full size of the house, is seven feet high in the clear. The foundation walls are laid on footings set in cement. The walls are of sound building stone, eighteen

FIG. 1. FRONT ELEVATION.

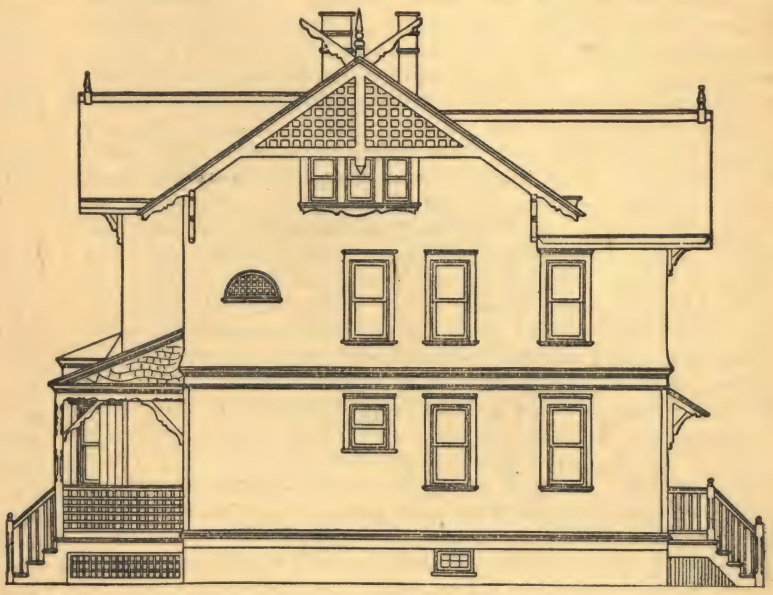


FIG. 2. SIDE ELEVATION.

inches thick at the bottom, tapered to sixteen inches at the grade line, laid in lime and cement mortar. Above the grade line the foundation is of dressed stone or brick eight inches thick. The bottom of the cellar is covered with a cement concrete, made of three parts clean, sharp gravel to three parts of cement, two inches deep. The cellar is entered by a stairway under the main entrance hall, and also by an outside hatchway in the rear of the house.

The first story, of which a floor-plan is shown in Fig. 3, is ten feet high in the clear. As will be seen, it is entered from a veranda eight by ten feet. The entrance hall may be warmed, if desired, by a small stove leading into the kitchen chimney. The stairs are provided with newels of cherry or oak, and handrails and balusters of maple. The parlor and dining-room have each a bay-window and open

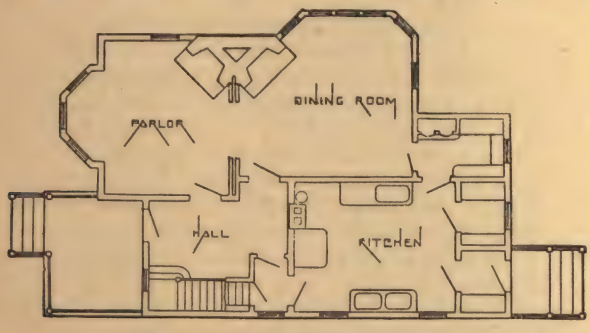


FIG. 3. PLAN OF FIRST FLOOR.

fireplace, and are separated by sliding doors or curtains. The hall, parlor, and dining-room are finished in hard wood, sand-papered, then given a coat of wood filler, and two of copal varnish, rubbed smooth. All is left the natural color of the wood. The kitchen is provided with range, sink, water-heater, and work table. It is wainscoted three feet high except back of the sink, where it is four feet. The wainscoting is of five-eighths pine beaded ceiling, three inches wide, with a neat cap. An entry way with convenient shelf separates the kitchen from the outer back door. A storeroom occupies the space between the entry and the pantry, and both are duly fitted up with shelving and cupboards.

The second story is nine feet high in the clear, laid out as shown in Fig. 4, to contain three roomy chambers, a hall bedroom, and bathroom. The entire second story is finished, like the first, in hard wood, of the natural color, and varnished. The walls and ceilings of both stories throughout are hard-finished on one scratch-coat of brown mortar.

The attic, which is reached by a stairway leading from the upper hall, is floored, and can be finished or not as convenience demands.

The outside of the house is clapboarded to the belt line at the top of the first story, and shingled above. The roof is also shingled. The clapboards are given two coats of white lead and oil, with any desired tint. The shingles are stained with burnt sienna and a little Venetian red. The building is heated by a furnace, with cold-air pipe, registers, etc., in the latest improved method. Such a building, exclusive of furnace and range, could be built, in the vicinity of New York, for $3,500.

CARE OF GRAPEVINES IN CITY YARDS.

THOMAS BENNETT, NEW JERSEY.

Grapevines in city yards are rarely properly pruned and trained. Sometimes half, if not all, of the last season's wood is left on, resulting in a large crop of small bunches. The owner then thinks his vines are doing well, but the following year he either has a very poor crop, or the vines have become so weak that they become a ready prey for disease. The remedy, in a great measure, lies in properly pruning, and in not allowing the vines to bear too profusely. Who-

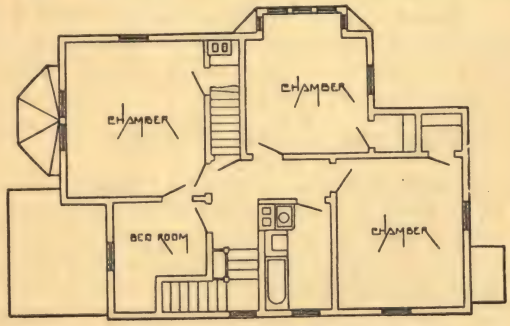


FIG. 4. PLAN OF SECOND FLOOR.

ever is satisfied with a moderate crop will mostly have healthy vines and good, sound fruit for many years.

Another unsightly feature frequently met with in city yards are arbors from ten to twelve feet high, bearing only on the top, and the sides almost naked of young wood. The old vines stretch up and over-crowd all on top, whereas those same arbors, by proper training, should be covered with bearing wood from within one foot of the ground to the top of the trellis. Old grapevines can be brought down and layered, that is, buried, in the ground six or eight inches, where they will throw out young roots. Thus, old vines may be rejuvenated and enabled to bear equally as well on the

sides as on the top of the arbor. The grapevine is a greedy feeder, and must, therefore, be well supported with manure to produce a satisfactory crop for any length of time. Housekeepers generally are aware that soapsuds are good for their grapevines, but they seldom apply them properly; they are thrown on the hard ground, all over the surface, rarely go in more than an inch or two deep, run away, and are, for the most part, lost. Before putting them on, the soil should be loosened well with a pronged hoe, so that the suds will enter the ground at once, and soak in down to the roots.

HOW TO PUT UP A HYDRAULIC RAM.

W. E. THOMAS, MARYLAND.

In the AMERICAN AGRICULTURIST for September is an article on the use of the hydraulic or water-ram, which it would be well for its readers to consider. This little machine, where the conditions necessary to its working exist, or can be made, even by some outlay of labor for first cost, is about as perfect for its purpose as can well be imagined. Any man of ordinary intelligence, who can read and understand plain and extremely simple directions, can erect one.

The principle on which the water-ram works is, utilizing the force which the water attains in running from the head provided through the feed-pipe into the ram. This is done by the check valve or plunger being moved upward by the flow of running water coming from below. This sets the plunger firmly in place, obstructing the outflow in that direction. In the bottom of the chamber of the ram, over the running water, is a valve that allows the inflow of water, and prevents its running back. When the plunger is forced up, the suddenly-checked water finds an outlet through this valve. When this force is expended, which is well nigh instantaneous, the plunger falls back by its weight, and again the water runs through the perforations provided for that purpose, and carries it up again. A large part of the water is thus lost to get the balance when it is wanted. The principle by which the water is forced up is not by compressed air. The duty of the air in the chamber is to act as a buffer. The water working up the supply pipe gradually exhausts this air. This loss is guarded against in some patterns by the use of a pin-hole in the feed-pipe, near the chamber, which sucks a little air in at every stroke of the plunger. The first conditions to be observed in putting up a ram is to secure a proper head for the height the water must be raised, and the amount desired. My machine had a fall (the best I could give it) of three feet eight inches, and raised water to a tank three hundred and fifty-one feet away, up a hill fifty-two feet above the ram. If there had been a fall twice as great, probably four times as much water could have been supplied. The next condition is, a proper outlet to carry waste water readily; the last and very necessary condition is to provide a frost-proof covering for the ram and pipes, burying the pipes in soft ground twenty to twenty-four inches, and in packed ground thirty inches. Don't try to run a very small supply-pipe; the friction is too great. I tried three-eighths-inch, and found it too small. Use galvanized iron or lead pipe, or, what is still better, rustless iron pipe. Put up a ram properly! It cannot easily be put in any other way, so far as the instrument itself is concerned. But make all the little conveniences for house and barn, as they will be wanted.

The invention of the water-ram, like other useful applications of Nature's forces to man's every-day wants, was by a Frenchman, Montgolfier, who also made the first balloon.

DIGGING AND STORING POTATOES.

Potatoes have been, as a general thing, an unsatisfactory crop this season, on account of the rot, which in many localities has proved very destructive. Potatoes, whether early or late kinds, should not be left in the ground long after the vines die. If the potatoes are sound, a second growth may take place, to the injury of their quality. If there is rot among the potatoes, digging and drying them is one of the methods of arresting the trouble. If the vines have been killed by the fungus, before digging rake the remains of the tops to one side in heaps between the rows, and burn them. This will materially prevent the spread of the pest. If too green to burn readily, a few sticks of dry wood or kindlings will help make a blaze that will destroy the tops. In digging potatoes expose to the sun as little as may be, but as soon as dry, gather up and store in a dark, dry and well-ventilated cellar. Potatoes are best stored in slatted bins to hold a few bushels each; these have the bottoms of slats and the corner pieces project below to join legs. These bins may be set upon one another, and allow of thorough ventilation. They facilitate the tubers to be overhauled, should the spread of the rot make it necessary to examine the contents and separate the badly-decayed from the sound ones. A handful of slaked lime strewed over the potatoes in each bin will aid in checking the progress of the rot. Decayed potatoes should not go to the manure heap, but be thrown upon a heap of burning rubbish, or make a fire of brush for the purpose.

WHY THE STRIPPINGS ARE SO RICH IN CREAM.

HENRY STEWART.

Every person who knows anything of milk knows that the last drawn milk of a cow is much richer in cream than the other milk; but the reason for this is not generally known. Indeed, it has been a subject of dispute, and the explanation usually given is quite erroneous. The structure of the cow's udder well studied will explain why the strippings are so rich. Any fact learned is interesting in two ways: first, because it is pleasant for the mere knowledge gained and the relation of it to matters of daily life; and second, because the knowledge is a guide to the right kind of practice in daily work.

A cow's udder is composed of a solid mass of glandular substance apparently made up of very small nodules or masses, through which a fine membrane passes so as to separate the whole into cells or divisions. The udder is divided into two parts by a membrane from the front to the back, making two separate and distinct halves. These halves are not divided, and yet the front and back part are distinct from each other; each quarter being connected with the teat which belongs to it by the small cells or divisions and small pipes or ducts leading from them to the teat. The upper part of the udder is made up almost wholly of fat; the lower part has very little fat in it. Consequently with this structure the udder cannot, as many have taught, be a simple reservoir of milk in which the cream can rise to the top as it accumulates in the udder. The udder, in fact, can hold very little milk. In a recent examination of an udder by careful dissection, the combined spaces or ducts in it were found to be insufficient to hold half a pint of milk; but the milk was held as by a sponge of close texture all through the glands of the udder, and in the small cells mentioned, which thus kept the milk as if thousands of small bladders, each holding milk, were gathered into another and much larger bladder, but all the milk found would not measure a pint; and this udder was taken from a cow milking several quarts at a time, that was slaughtered twelve hours after having been milked.

The milk, therefore, must be produced in the udder as the milking proceeds; and the cow may prevent the flow of milk by repressing this action. The giving of milk is clearly a voluntary act of the cow, and as she lets it down the milk flows from these cells into the passages leading to the teats. Necessarily the milk from the upper part of the udder can only come down last; and the glandular substance in this part of the udder being mostly fat, the milk is made up largely of fat, which is mingled with the serum or milky fluid that escapes from the glands by a change of the substance into milk. Thus the richness of the strippings is accounted for.

One useful lesson may be learned from this study. It has been said that the richness of the food of a cow in fat does not increase the richness of the milk. The palpable unreasonableness of this, evident to those dairymen who have found it profitable to feed food rich in fat to their cows, is distinctly proved by the facts mentioned. For it is admitted that rich food does make fat in the animal. No one is hardy enough to deny that. But if the rich food increases the fat in the udder, and this fat mixed in the glandular substance, and seen by the aid of a microscope to exist in the form of small globules in the glandular substance, escapes as this substance breaks down into the serum of the milk and makes the milk from this part of the udder exceedingly rich in fat, then this fat (the butter) must have been increased by the fat in the food. And the practical experience of the dairymen that it pays to give oil meal and corn meal that are rich in fat to increase the butter yield, is corroborated and confirmed, in spite of the belief of persons who may think otherwise.

Care of Cold Frames.—Plants for next spring's planting may be set from the seed-bed in the open ground in the frames. Set cabbages, etc., down to the leaves. Do not put on the sashes until cool weather requires them. The plants are to be kept dormant. Prepare cold frames for early planting, fill with straw or leaves to prevent freezing, and put on shutters.

MANUFACTURING BARREL HOOPS.

W. D. BOYNTON, WISCONSIN.

Assuming that the poles have been artificially grown by the process described in a previous number, the first cutting will probably be made the fourth or fifth year from time of planting. If grown thickly, as directed, there will be from 20,000 to 30,000 poles on an acre. Perhaps not more than one-fourth of these will be of sufficient size to cut this first time. The lengths required are as follows: For molasses barrels, eight-foot poles; for pork barrels, seven-foot; for smaller sized barrels, four-foot six inches, five-foot six inches, and six-foot. The greatest demand is for the two longest mentioned. The poles to be manufactured into these lengths must be at least one inch in diameter at the top end. The smallest size mentioned need not be over five-eighths of an inch in diameter at the top end. As a rule it will not pay to cut the poles until they have attained the larger sizes named, as the price is so low for these small sizes that it will be more profitable to give the timber another season's growth before cutting. Then, too, quite a quantity of the long poles are so injured in making up that they can only be made into short lengths, which usually gives a sufficient proportion of these sizes to satisfy the demands of the market. The cutting should be done in late autumn and winter, so that new sprouts will spring up to take the places of the trees removed. A constant supply is thus kept up. Care should be used not to injure the smaller poles in taking out the large ones wanted for immediate use. A light hatchet is best for the work. After the poles have been dragged away from the growing timber, trim them in a place where the brush may be piled and burned if not wanted for other purposes. Trim closely, and sever the top with a diagonal cut to facilitate splitting later on. A small shop may be built at little cost, expressly for making the hoops, as it may be wholly of rough lumber of a cheap grade. It should be made tolerably tight—not to protect the workman from the cold, for if he is industrious he will not suffer at this work, even with his coat off—but he must have a room warm enough to thaw the frost from his poles. They cannot well be worked when full of frost, as the splitter will not follow the grain, and the knife works great havoc in shaving. A section of an old smoke-stack, four or five feet long, makes a good heater for this purpose. Set one end in a sand bed, as a precaution against fire on the floor; fit

FIG. 1. THE SPLITTER.

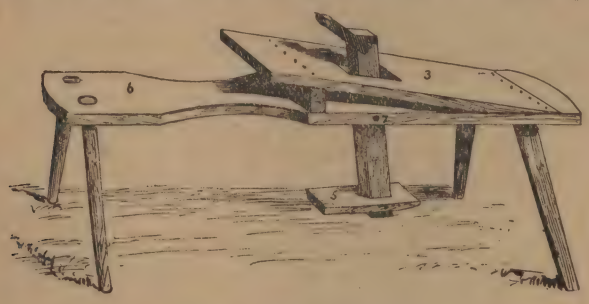


FIG. 2. SHAVING-HORSE.

a top to it of sheet iron, in which a hole is made for the pipe to be attached. Cut a huge door in one side, through which may be crammed whole armfuls of the shavings and other refuse from the manufacture. Nothing is too green to burn in one of these heaters.

Stand the poles up around the heater and against the walls near by, where they will get the full benefit of the heat. Put as many poles into the room in the morning as can be manufactured through the day, that they may all be thawed. Fig. 1 shows the splitter. The largest portion is a log or post about a foot in diameter, and three feet long. This is placed within eighteen inches of the side of the room, firmly spiked to the floor and braced by a stiff stage from near the top of the post diagonally to the studding of the wall. The top of the post serves as a chopping-block upon which to cut off poles and start the end slit before using the splitter above. Firmly spiked to it is the splitter proper. It is made of a tough piece of dry oak plank half an inch thick and eight inches wide. As a rule the pole will make either two or four hoops. Always split from the top end. Lean this end against and on the top of the post or block, and with the hatchet start the split in the center. Withdraw the hatchet, take the pole in both hands, press the cleft end on the splitter, the wedge form of which will easily and rapidly open the pole with the pressure exerted by the workman. If the cleft seems not inclined to follow the center, or where wanted, a little wrench by the workman will throw it in or out as wanted. A little practice will enable any one to control it to a nicety in this respect. The post must be solidly spiked in place, as there must be much force exerted on it, and the splitter must be of good tough, dry wood. Steel or iron will not answer here. When one splitter wears out another must be put on.

Fig. 2 shows the shaving-horse: 6 is the bed-piece, or seat for workman; 3, table over which the hoop passes in shaving. It is supported by a block, 2, which holds it six or eight inches above the bed-piece. It is rounded at the lower end, and firmly spiked at both bearings. The slot must be large enough to allow the arm, 4, to play easily. 1 is a three-fourths-inch iron rod, eight inches long, to which an iron plate is welded, by which it may be attached to the top front side of arm, 4. When the foot is placed against the treadle, 5, this rod or jaw is thrown down on the hoop, which may

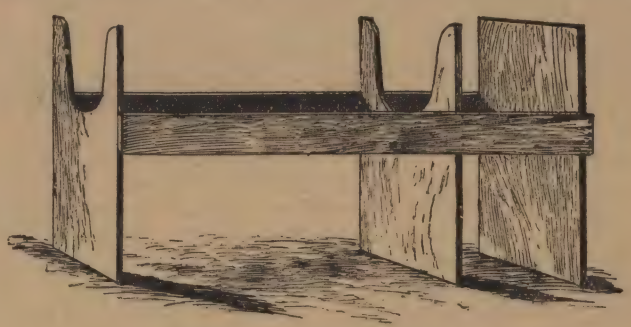


FIG. 3. THE TYING-RACK.

run the length of the table on either side of the arm. Use a smooth round rod for this jaw. The hoop may then be slipped back and forth rapidly in shaving. The arm is swung on a three-fourths-inch bolt at 7.

Lay the split pole on the table, heart side up, letting it extend under the arm of the workman, and back of him, so that the jaw of the shaving-horse barely catches the end on the table in front of him. As he shaves, he loosens the jaw occasionally, pushes the shaved portion along down the table, and thus brings the unshaved portion in front of him. Shave out the heart, or as much of it as may be necessary to give the hoop the proper pliancy. Any cooper can give the desired information as to this, or the uninitiated may easily ascertain by simply bending the hoop around in a circle. If uniform and of the proper thickness, it will make very nearly a perfect circle when bent, and may be brought together with but little exertion. After a little practice all this will be done almost mechanically, with no necessity for testing, except occasionally a hoop to guard against varying too much one way or the other. A long, steady sweep with the knife produces the best results. A short, chopping motion is apt to produce an uneven and unsightly hoop. The regular hoop-shave is a broad-bladed one, which can be set at any desired angle. It may be had of almost all dealers.

The construction of the tying-rack is plainly shown in Fig. 3. It has a head-piece, against which the butt ends of the hoops are placed. The middle upright piece can be moved to suit the length of hoop to be tied. The binder represented in Fig. 4 is placed with the rope across the rack, a lever hanging down on either side. After the hoops are placed in, this rope will be under them, but on

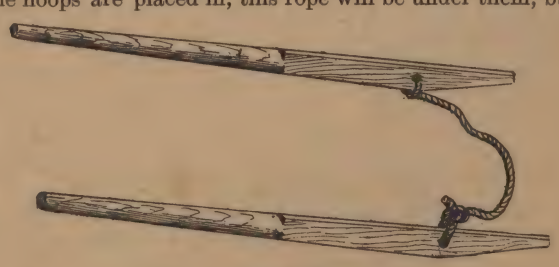


FIG. 4. THE BINDER.

top of the side horizontal pieces. When ready to bind, swing the short ends of the levers up over the bundle; then lift up on the long and outer ends. This encircles the bundle. Lift up until the long ends stand up straight and together. Now cross and bring down with full weight; tie, change ends with bundle, and do the same

again. A stout tarred twine is made purposely for this work. The tie should be made about two feet from the end of the bundle of the long hoops. Put fifty in a bundle of the greatest lengths, and one hundred of the short ones. To split and shave three hundred of the long hoops is considered a day's work, and of the short ones six to eight hundred. These bundles may be stacked away and kept almost any length of time, if in a dry place, as they have to be steamed in any case before using in the large factories.

A JERSEY DUMP-WAGON.

The illustrations herewith show the general appearance and structure of a very convenient dump-wagon, which is in quite common use among the farmers of Monmouth, Ocean, and some other counties of New Jersey. Figure 1 is a perspective view of the wagon, with a part of one forward wheel removed to show the construction of the dumping part. Figure 2 shows the manner of dumping. No special running gear is needed, as the hind wheels and entire forward axle, with wheels and all, can be used.

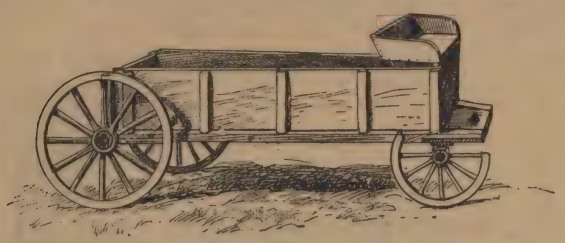


FIG. 1. PERSPECTIVE VIEW OF DUMP-WAGON.

The outer frame has two side-rails, each nine feet long, and three by five inches, with one end mortised into an ordinary hind axle one foot from each end. The ends of the axle are rounded off and ironed, as usual, to receive the hind wheels. At the forward end of the side-rails a notch two-and-a-half inches deep and fifteen inches wide is cut in the under side, in which a piece of hard-wood plank of the same dimensions and two feet ten inches long is firmly bolted. To the lower side of this piece is fastened a bolster, six inches wide and four inches thick in the middle, tapering to two inches at each end. A staple of five-eighths-inch round iron is set midway in the bolster-piece, projecting four inches above it, and secured by nuts on the lower ends. A three-quarter-inch hole is bored through the middle of the bolster-piece and bolster, for the king-bolt. Five strong stakes are mortised into each side-bar, the front ones being one foot from the end. Two stakes are also set in the hind axle to support the tail-board. The side-boards, of any desired width, are nailed or bolted to the stakes. The outer frame is now complete.

The inner or dump frame and bottom are made of a width and length to fit easily into the outer. There are two side-bars, each three by five inches, and eight feet seven inches long; a cross-piece,

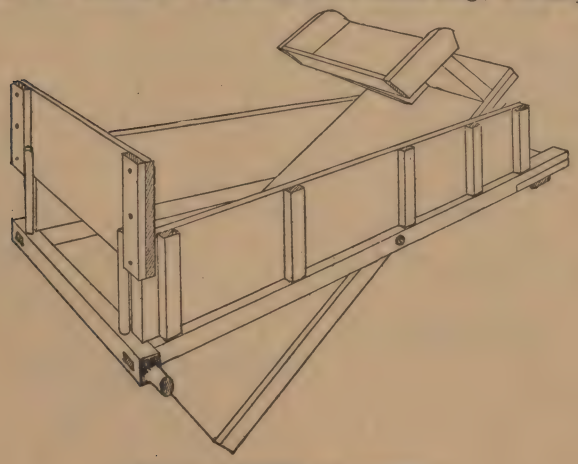


FIG. 2. MANNER OF DUMPING.

six inches wide and two thick, framed into the rear end, and one fifteen inches wide at the front. The bottom is of inch-boards fitted and nailed snugly to the frame. The forward ends of the side-rails are notched on the lower side like those of the outer frames, to admit the bolster-piece, and a slot one inch wide and four long is cut through the front cross-piece and bottom boards, for the staple. Any desired form of seat is attached to the forward end-board. This frame is hung to the outer one by a bar of five-eighths-inch round iron, three-and-a-half feet from the hind end. The frame is held in place by a pin through the staple in front, which is removed for dumping. The whole is made narrower in front than behind, for the reason that such a form admits of more freedom in turning the forward wheels.

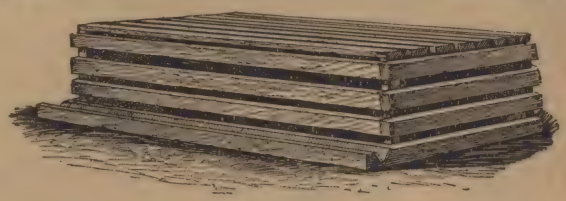
For use, the hind wheels are removed from any ordinary farm-wagon and put on the axle; the king-bolt is drawn, and the forward axle, with wheels, tongue and all the forward running gear, is placed under the dumping-box and made fast by the king-bolt.

Such a wagon is extremely useful for hauling manure, sand, potatoes, or any articles that may be unloaded by dumping.

PREPARING AND SHIPPING LIVE POULTRY.

S. B. CONOVER, NEW YORK.

Poultry shipped alive to market should be well-fattened, healthy and free from blemish. It is mostly used by the city people who will not take or use any fowl or animal that is in any way deformed; but for unblemished and well-fattened fowls they are willing to pay the highest price. Before putting them in the coops, give plenty of feed and drink. Feed grain only; meal sours. Do not over-crowd the coop, as it causes excessive heat and makes the fowls feverish and sickly. If sent by express the coop should be as small and light as is compatible with sufficient strength to bear rough handling. Freight is charged on weight of coop, as well as of poultry. Old roosters usually sell at half the price of fowls, and young roosters are rated the same as chickens. Small and near-by lots are best sent by express, and the coops will be returned free of charge. These can be made smaller and lighter than those which are sent by freight. A good and convenient size for express coops for fowls, chickens and ducks, is as follows: Boards for ends and middle, each two feet long, one foot wide and five-eighths of an inch



CRATE FOR SHIPPING POULTRY.

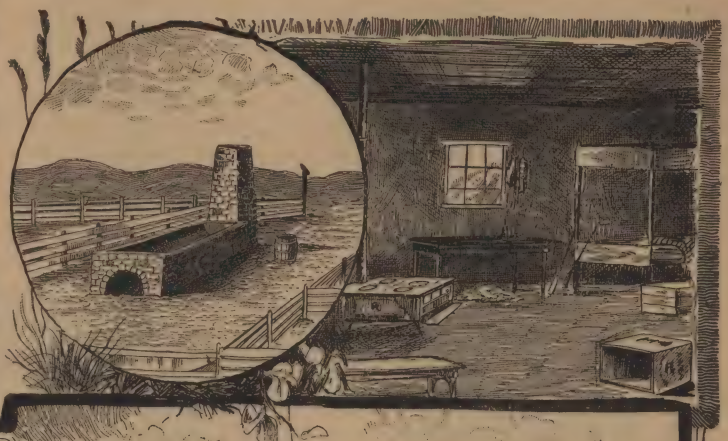
thick, free from shakes or splits, and of light dry wood. For the bottom use boards four feet long and three-eighths of an inch thick. For sides and top, good, clear, straight-grained plasterers' lath is the best and cheapest. Make the bottom of boards the same length as the laths and of full width of the end and middle pieces. Nail the lower laths close against the bottom boards, on both sides, to prevent the fowls from getting their feet or legs out. Leave interstices of about two inches between the laths on the sides, but only one-and-a-half on top. This prevents the fowls from sticking their heads through and being injured or killed, as one coop is placed on another. Do not nail the two middle laths on top of the coop, but use screws, so they can be easily removed. Nail a piece of thin, light hoop-iron all around the ends and middle. For small spring chickens and pigeons make coops of the same dimensions, but only eight inches high, as only strong, healthy pigeons are used for trap shooting. Do not put squealers or young ones in, or any with clipped wings, as they will be thrown out when sold. For geese the coops should be fourteen, and for turkeys sixteen inches high. For shipping by freight or long distance, make as follows: Five feet six inches long, three feet wide and one foot high for chickens, fowls and ducks; for geese, fourteen inches high; and for turkeys sixteen. The coop is divided by a partition across the middle. Use posts two inches square for the corners and middle. The slats on each side next to the bottom should be three feet five inches long, the others at each end three feet long. The five inches extension beyond the end of the coop is to hold a feed trough. The long slats and bottom boards are five feet six inches long—all three-eighths of an inch thick. The slats are from two-and-a-half to three inches wide, free from knots, and straight-grained. A V-shaped notch is cut in the projecting ends of the lower slats to hold the feed trough outside of the coop. Put the slats on the sides and ends, about two inches apart; but closer on top, to prevent the fowls from getting their heads through. Make a feed trough of two pieces of board, four or five inches wide, and the length of the coop with end blocks in, and nail well in the notches of the bottom end pieces and to the side slat. The best feed to use is cracked corn thoroughly soaked, as it holds the moisture and will not sour. The illustration shows the heavy style of coop in perspective.

SHEEP-RAISING IN MONTANA.

F. W. ANDERSON, MONTANA.

It is well known that the breeding of sheep for their mutton and wool has proved wonderfully successful in Montana; so successful, in fact, that many men engaged in the business only a few years have become wealthy. Of these, probably over fifty per cent made a start by taking sheep on shares, because they were too poor to buy a band outright. The prime cause of this success is good management; next, the remarkably healthful and invigorating climate; and last, but perhaps equal with the others, the abundance of the most nutritious grasses.

In raising horses and cattle, there is less work, and emphatically less "worry" and "bother" than in raising sheep; but the returns on the money invested are slower in becoming available. A man starting in either of those branches must wait until the third year before he can realize any cash income from his investment. Now, in the sheep industry, if a band is large enough, and is properly managed, the clip alone ought to cover the first year's expenses. It does not pay to raise light-wooled sheep here. There is a greater demand, a better market, and a much heavier clip *per capita* to be realized from the shorter, but closer and firmer-wooled sheep. Moreover, such sheep stand the sudden, and often extreme, variations of temperature better than the light-fleeced breeds.



ON THE SUMMER RANGE.

NIGHT AND NOONTIDE.

Graded Merinoes are almost universally bred. They may be bred up or down by various combinations of other breeds with Merino. Cotswold ewes are often used. A very good grade Merino can be produced by first breeding these ewes to fine, large Shropshire rams, and the subsequent offspring to good Merino rams. These Cotswolds are excellent mothers, and generally have plenty of milk. The Shropshire has a much heavier body, a rather closer and finer fleece, but is by no means so hardy as the Cotswold in this climate. But the cross between these breeds has usually the good qualities of each in some degree. This cross judiciously bred to Merinoes makes a smaller sheep than the Shropshire, but sturdier, and with closer and firmer wool. From this cross, breeders can raise their flock to three-quarter Merinoes without losing much of the hardiness and capacity for travel absorbed from that antelope's cousin, the Cotswold. And this is an important point in the make-up of a Western-range sheep. A really good flock of this kind will average nine or ten pounds of wool per head. The wool probably averages twenty cents a pound. Some years it is worth twenty-seven to thirty cents, and again, it may drop to seventeen cents; but twenty cents is about the average price. Now, let any man allow two-thirds the sum total of what such a clip would be worth, say from a band of two thousand sheep, for the year's expenses of all kinds, losses included, and he will still have a fair cash profit, to say nothing about increase in lambs.

THE KIND OF SHEEP TO CHOOSE.

Various other crossings and gradings are made besides the one mentioned above, but all, or nearly all, are made with the ultimate object of securing heavy fleeces of medium to fine medium Merino wool. Pure Spanish Merino sheep have two characteristics that must be bred out to make them perfect for the Northwest. The greater of these is an excess of grease in the fleece. Very greasy fleeces mean cold fleeces in the winter time. Sheep with such will cringe and droop at 10° below zero, while those having but little grease in their wool go feeding, and frisk about, just as in milder weather. The other feature is the wrinkles and folds in the skin. These wrinkles are, at shearing-time, an expense, because, as it takes longer time and greater care to shear a wrinkled sheep, the shearers will not do the work at the same price they receive for a smooth-skinned animal.

MANAGEMENT OF SHEEP.

Nothing is more important than careful management. Every year we see and hear contrasted cases of fearful, bankrupting losses and remarkable successes in the Western sheep business. It is almost universal that the losses are purely the result of bad management. When a band changes hands, or when one is taken on

shares, it is customary to make the transfer after shearing-time, so that there may be ample time for winter preparations. There is hay to cut, haul and stack; sheds and corrals to repair or build; cabins and stables to make snug, and a host of other things to do. So, I will first describe the fall and winter management.

The majority of the losses in sheep are attributable to the lack of proper winter quarters. Keep the sheep dry and warm at night, and they will keep fat and strong. This is the more important from the fact that breeding is begun in November, and to have fine lambs and plenty of them, the sheep must be kept in good condition. The sheds may be built of any convenient material. Sheep-sheds if too high will not be warm. The eaves should not be more than four feet from the ground, and the center beams not more than six feet. Neither must the sheds be too tight; there should be good ventilation; but it ought to be so contrived that the air is warmed as it gradually passes through. Sheds, too, should always be built on a slope, in order to secure perfect drainage at all times; and in winter straw, which, I am sorry to say, Montanians often burn to get rid of, should be strewn on the ground. Finally, there should be plenty of room, so that the sheep may not be crowded, and strong, heavy animals crush down the weaker. In one corner of the shed there is usually a place fenced off for the hospital band, another place for the bucks, and yet another for any contingency that may arise. The sheds should form three sides of a square, having openings at intervals, provided with gates leading into the large yard, throughout the West called a corral. Like the sheds, the corral should be well-drained. Around its sides should be arranged racks or other contrivances for holding hay when the weather is too severe to take the band out on the range. The "hospital pen" and ram pen should have a piece of the corral fenced off for their use, and it is customary to fix racks in their shed-pens as well as outside. The next thing to make sure of is a good supply of low, cheap wooden troughs, in which to feed salt, oats, chopped turnips, or other articles of diet. Now that these sheds, pens, etc., are all in good order, the herder must see that the hay is hauled, stacked, and securely fenced, right near the sheep corral, unless this has been seen to already. Next, the cabins, or other buildings to be occupied by the herders (shepherds) and other men ought to be looked after. It is customary to purchase at least six months' supplies of provisions at a time, as considerable discount can be gained by buying goods in large quantities; and then, besides, the ranch, in many cases, is from forty to sixty miles away from a trading point, rendering it practically impossible to go to market very often.

In winter the sheep are driven out to feed on the range just as in summer, except during very stormy and unusually cold weather. The range, for a radius of several miles around the "home ranch," is saved during the summer months for this purpose. In excessively severe weather recourse is had to the hay stacks. The hay is hauled to a sheltered place not far from the ranch, and scattered over a considerable space, or else is laid in long windrows. The sheep are then set free to eat it. This is done in the morning, and again late in the afternoon. If the weather is too windy or otherwise unpropitious for scattering the hay in this way, the sheep are fed in the racks around the sides of the corral; but this method is not practiced except when absolutely necessary, as it entails much more work, and gives less-satisfactory results. In winter, too, there is invariably the "hospital band," which varies in size according to the weather. All the feeble, sick and lame animals are put into this little flock, and kept in that part of the corral allotted to them. They are only allowed outside when the main band is away feeding on the range. It is customary to give these "hospital sheep" a few oats twice a day, and a few chopped turnips, along with their other food.

When spring comes, many flock-masters move their sheep from the winter or "home" ranch to fresh feeding-grounds, but this is not desirable in cases where there is still enough feed on the range for the lambing band. It is, however, a good idea to separate all the wethers and sterile ewes, and camp them away from home, so that the gravid ewes may have perfect rest, and not be compelled to travel on the range with the more nimble wethers. And, besides, there ought to be proper shed conveniences for the ewes and young lambs in rainy weather, such as could not be had at a summer camp.

After lambing is over, which usually lasts about a month, the sheep are carefully moved to fresh pastures, not too far away from home, until shearing time. Shearing usually is commenced the latter part of June, or early in July, and lasts from two or three days to a week or more, according to the number of sheep to be sheared, the character of their wool, and the state of their skin. As mentioned before, a band of wrinkle-skinned sheep cost more for the shearing, and take longer. The wool is pressed into ordinary wool sacks, and piled up ready for market. Most men sell their wool as soon as sacked. Shearing once over, the sheep are often dipped to kill the ticks that may be annoying them, and, less often, for the scab. There is very little scab in northern Montana, but in some of the Western States and Territories it is so bad that owners have given up trying to eradicate it, and only try to hold it in check by frequently dipping their sheep in hot or cold solutions of one admixture or another.

After shearing and dipping, the sheep are carefully counted and once more turned over to the herder, who then drives them to the summer camp, which, when possible, is chosen in the foothills, close to the mountains, and in the vicinity of a stream or spring. In most foothill localities there are numerous springs of pure cold water, with little rills running from them. The grass in these regions is very luxuriant, tender and juicy. The sheep will get "fat as butter" on such pasturage in a remarkably short time. It is desirable to move camp several times during the summer—say move the corral and hut three or four miles each time, to give the sheep plenty of fresh range all the season. In October—but sometimes not till November—the sheep are brought back to the home ranch and winter range, where they are kept and treated as already described until the following season. We have thus gone the round of the year in "sheep-raising in Montana." It is an industry continually on the increase. Our wools are as fine as any in the world, and to-day bring high prices.

DISEASES AND ENEMIES OF SHEEP.

It may be asked what diseases trouble sheep in Montana. The only one is scab. No foot-rot nor lung diseases exist. Sheep are sometimes brought here with foot-rot, and a few weeks on the dry plains effects a permanent cure. In a large band there are sure to be all the way from several to even twenty lame sheep. The lameness is caused chiefly by the animal treading accidentally upon prickly pear plants, the spines of which sometimes penetrate the soft part of the hoof and break off. A good herder will look after such animals, and soon set things right again; but I have seen bands herded by indifferent men, in which at least one-fourth of the whole number painfully limped along. Another cause for apprehension at times is the bite of rattlesnakes. Sheep are more frequently bitten on the end of the nose than on any other part, and if the bite is severe, it is likely to kill the victim. If taken in time, the animal may be saved, but is rarely as valuable again for wool, mutton, or breeding. The best antedote is aqua ammonia. The snake's poison causes the sheep's face and neck to swell to an enormous size. When the swelling is going down, the muscles of one side of the neck are usually contracted, and remain so, drawing the head to one side. That indefinite term "locoed" is perhaps more frequently on sheepmen's lips than "scabby," or "snake-bitten." You hear a Montanian talk about "locoed," and you can set it down that he means an animal has been poisoned by some pernicious weed, to him unknown. If an animal refuses to eat, froths at the mouth, and wanders aimlessly about, with big, staring eyes, and an abdomen swelled out big enough for four, you can confidently assert that that animal has been "locoed." Animals in such plight rarely recover, and can't be cured, because no one knows the true cause of the disease. But it is pretty safe to say that it is really caused through eating undue quantities of harmful weeds. The last source of danger is sheep-killing wolves. Those are the only kind of wolves we have in Montana, when they are allowed their own sweet will. The small prairie wolf or coyote has been quite a pest in some localities, but all these animals of prey are getting pretty well thinned out.

[The large illustration, engraved from drawings by the writer of the article, shows various phases of sheep-ranching in Montana. The central view is of a herd on the range. At the top, in the circular medallion, is a view of a dipping-trough and pens; at the right is an interior view of a herder's winter quarters. At the left center is a partial view of the summer quarters, with corral. Beneath it is a characteristic midnight scene, and at its right is shown a herder, taking his noontide recreation with a rod and line.]

If you Cannot Procure Meat for your fowls, buy them some cotton-seed meal. If fed daily, one pint to a mess of soft food for two hundred hens is sufficient. Milk is also an excellent substitute for meat, and, in fact, is considered preferable by some poultry-keepers. No matter how well-balanced their ration may be, change it often. A variety of food gives zest to the appetite and stimulates digestion.

THE TENNESSEE MOUNTAIN RACER.

J. C. COTTON, TENNESSEE.

Whoever places the horse or the dog next to human beings in the scale of intelligence and sagacity, has never made the acquaintance of the Tennessee hog, the genuine razor-back. One who knows the pig only as the fat, sleepy, grunty occupant of the sty, has no idea of the spirit and wisdom, the daring and enterprise, of the species, when born and reared among the rugged mountain regions

of the Cumberlands. In contrast with the close pen which is all the world his Northern cousin ever knows, freedom is the very air his pigship breathes, from the time when he opens his narrow, speculative eyes, in the beechen shade of the hills, until the unlucky day when he is cornered by human craft and numbers, and reduced to bacon. His education begins in infancy, guided by his mother, who shows him the way into all the best gardens, orchards, and cornfields. "He is a shifty fellow" was the recommend given by a Cumberland valley farmer, to a recent Northern settler, of the porker he was about to sell him. "He has allus shirked for hisself." The purchaser gave one thought to his own garden patch; but not enough, for his summer was spent in devising barriers *over* which, or *under* which, or *through* which it was pastime for that hog to make his way, and the man's anger was finally lost in admiration of the sagacity of the animal, whose feats of agility and ingenuity enabled him to maintain his own healthy condition; and also to treat his friends,—for he is not wholly selfish.

I have seen him plant his long snout under a gate, and raise it more and more, until he had wormed himself half-way through, then hold it, resting on his strong "razor-back" until the drove of half a dozen or more followers, under his charge, had squirmed through, then, with an expressive grunt he would lead a raid on the corn-field, where a forest of tall stalks, from twelve to seventeen feet high, had been left supposably bare, to decay during the short, wet winter. Piggy knows, however, that now and then an ear has been overlooked; and he enters the rows, cocking his head, now on this side, now on that, squinting up at the top of each tall stalk, until he sees an ear at the top; then quickly he straddles the bottom of the stalk and "rides it down" within his reach. Quickly it is devoured and another sought out and captured, until the field is gleaned; when he rallies his troops and guides them into pastures new. Gates and bars are a laughing-stock to him. Barbed wire is an agreeable irritant to his rhinoceros-like hide; and the hopeless farmer is often at his wits' end, until the time when friendly autumn strews the mountain-sides with "mast," which proves more attractive to these ubiquitous monarchs than are the cultivated gardens.

The Tennessee hog knows that the laws of his native State protect him, while the human would-be masters of the soil must look out for themselves; and he acts accordingly. An unpleasant thing to meet is a drove of these pets, when out of temper. They will turn, in a body, and chase man and dog, till both are glad to mount out of reach, on a fallen tree; and there they will hold them at bay, with backs erect, in a sharp line of bristles—whence their name—and with gruntings which cannot be described, gnashing their long, savage teeth, remind one forcibly of the wild boar, whence sprang their ancestry.

THE RAZOR-BACK IN PEACE AND WAR.

Keeping Celery.—Some gardeners preserve their celery for winter by banking it up in the rows where it grew, throwing a covering on each side up to the tips. This is the least trouble, but it may be frozen in, just at the time when it is most needed for market. The better way is to store it in trenches, where it may be taken out at

any time. A trench is dug in a dry place, a foot wide and as deep as the plants are tall, the length being suited to the quantity to be stored. The celery is set in this in rows across the trench, and setting the plants close to one another. As cold weather increases the celery is covered with leaves, or marsh hay, and finally with earth. The use of short boards over the litter will facilitate getting out the celery if there is a heavy fall of snow.

WHEAT FARMING IN THE NORTHWEST.

RICHARD WAUGH, MANITOBA.

If bonanza farming has not been crowned with the desired amount of success, it is not because the men who started it were weak and hesitating in their faith. Acres of buildings and acres more of the best mechanical appliances that money could buy were provided and thousands of acres of fine prairie put under cultivation in a year or two. Some of the men in charge of these big ventures were very capable, as the result of experience in other fields; others felt themselves still more capable for want of any experience. The thing was so simple and the "figuring" so alluring, that a courageous novice could go into wheat-growing and astonish the world with his achievements. Even the best of these great farm managers have had a hard battle with seasons wet and dry, hail storms, frosts and other such troubles, and with all the advantages offered by an unquestionably free soil have had hard struggles to pay their way.

One first-rate farmer near Fargo gave me an object lesson in wheat-growing the other day worth repeating here: He took me to a place where four sections met and the crop on all four was being cut. The best of the four was bearing a crop that, if gathered, might average 36.5 bushels an acre. Much of it was less, as not worth gathering. The next along bore the best crop. The next was his own, with a good medium crop for such a dry season. The fourth was a little worse. The key to these differences on land nearly the same, with the same climatic conditions, was that the first lot was owned and worked by a bonanza farmer pure and simple, who, after sowing seven continuous crops, the last two of which did not pay for seed and labor, must now either stop farming or summer fallow so as to call up some new productive forces and keep the machine going a few seasons longer. My friend, after taking four crops, summer fallowed, with a good crop last season and a fair one this, as the result. The section bearing the best crop had been still less drawn upon, and all the four had an obvious moral. He told me that his own scheme of farming was such that with his annual production of barnyard manure, he might, at his present rate, manure all his land once in a century.

There are, no doubt, rich stores of dormant plant-food in these far-reaching, alluvial plains, that by skillful management will produce many a crop of No. 1 hard, or something else perhaps as valuable; but, so far as my observation goes, Providence has not given much encouragement to the men who want to exhaust the resources of Nature as fast as they can do so, for the sake of the money they can find in it. The world will wag along a great many years more and want food all the time, and the experience of the last ten or fifteen years indicates that it won't pay to try and work out this rich wheat mine, at the headlong rate with which the first operators started in. Highly-profitable yields have repeatedly been made, and no doubt may be again, but the present indications point plainly to a variation from our present program. One man, Mr. W. R. Tanner, of Clay Co., Minn., is working on the line of ensilage, by which he hopes to keep enough stock in winter to enable him to maintain a regular system of crop rotation, embracing as part of his scheme the return to the land of manure enough to go over it all once in six or seven years. This method, in conjunction with the known resources of the soil itself, would insure continuously profitable crops without permanent or undue deterioration of the soil itself.

Another element of difficulty has conspired to defeat the projects of the bonanza farmers. There has been a very apparent increase in the amount of southwest wind within recent years, and combined with that a serious diminution in the volume of the streams. Manitoba and the northern borders of Dakota and Minnesota had in 1887 what Southern Minnesota had this year, rain enough to insure a memorably large wheat yield. But all the time the rivers have been gradually shrinking, and the Ohio, Minnesota and Red rivers with their tributaries are mere driblets contrasted with their volume in former years. We can, by skillful management, raise wonderful yields of wheat, in spite of scant rainfall, but unless some change of weather phenomena is imminent, our wheat yield will next year prove less than it has been this. In spite of the wofully stinted quantity of our rainfall, within the last twelve months especially, we have still big fields of two hundred and three hundred acres, running from thirty to forty bushels an acre of high grade red wheat. Our northwestern zone must have wonderful properties, when in spite of long spells of heat and drought it produces such fruit from moisture drawn from below and chance showers. But even capillary attraction will fail, at our present rate of rainfall, and we may then be forced to levy on the Missouri river for water to irrigate the dried-out grain fields of Dakota. That would certainly be a more remunerative project than some of those in which the world's capital is being occasionally invested. But perhaps the clerk of the weather may change his program and I may find myself in less than a year writing on the best means of keeping our flat prairies from being drowned by excess of rainfall. "Quien sabe?"

FARM POULTRY CLUBS.

Farmers who engage in the production of eggs and chickens for market, would find it profitable to start an organization among themselves for the good of the business. Their meetings could be held weekly, semi-weekly, or monthly, at the houses of members, and poultry topics could be discussed, experience related, new diseases reported, new ways of treating old ailments, and a host of other valuable matter brought up. A president and a secretary would be necessary. The work of the latter would be to seek any desirable information which none of the members could impart, and other matters that might be of interest and instruction.

Experiences could be given as to the crossing of pure-bred heavy layers so as to be more prolific; the best foods; how to feed; how to house, and how to give general care. Farmers, as a rule, know very little about the requirements of an egg farm. True, some very able works have been written upon the subject, but farmers generally do not possess them. There is no reason why we should not have "fresh eggs" in the dead of winter. Practical poultry farms furnish them, and so can all who keep fowls. It is the lack of proper knowledge that causes it. That knowledge may be partly possessed by one man, and partly by another, in any neighborhood, and, if clubbed together, it would revolutionize the whole work.

The poultry business has also entered upon a new line—the raising of broilers for spring. With the invention of artificial methods for hatching and raising broods came a renewed demand for broilers. The fact that spring chickens could be had in the dead of the winter sharpened the appetites of the metropolitans, and the manufacture of incubators and brooders has, in consequence, become a large business. Where is the farmer now? Why not add the use of the incubator and brooder as an adjunct to the other work of the farm? It is winter work—just when crops need the least attention. It is an issue the farmer could well handle. It would be an excellent matter to bring up before the farm poultry club. Here, then, are two important branches of the poultry business, and, by the proper conduct of a farm club, they could be handled with profit.

The attention of Secretary Rusk is being called to the fact that it is necessary for the United States Department of Agriculture to include poultry in some of its numerous and valuable bulletins. There is a need for several bulletins upon the subject. Poultry has become a staple industry. But our farmers need more information. These bulletins would reach the masses. There is a great future for poultry in our country. Our importations of eggs and poultry are too large. Why import millions of dozens of eggs and thousands of carloads of fowls annually, when our country affords such excellent facilities for producing both?

Liberal Manuring Pays.—A couple of years ago I undertook to make a small field, which was in rather poor condition, sufficiently rich to pay for cultivating. Consequently, I hauled upon it barnyard manure, chip dirt from the wood-yard, slaughter-house offal and refuse, until the ground was covered so deeply that the stuff could hardly be plowed under. A neighbor came along and criticised my methods. "That field would be rich—but the rest of the farm kept poor." The yield of potatoes from the manured ground was at the rate, this season, of two hundred and fifty bushels per acre; not an exceptional yield, but a good one for this locality. Sufficient to convince me, at least, that I received a better profit from the fertilizers than if they had been thinly spread over a larger

area. A little ground, made rich and well worked, will pay better every time than a large area of poor ground imperfectly worked. Which is only another way of saying that the last load of manure, and the last turn of the cultivator on an acre, pays better than the first one. And, until the capacity of the first acre is measured, it is folly to apply either to the second. R. FRANKLIN.

FORCING TOMATOES.

Our Southern States and Bermuda send their tomatoes to the markets of our large cities several months in advance of the ripening of the near-by crops, lengthening the season considerably. Yet it remains for Northern forcing-houses to round out the supply so that fresh tomatoes may now be had any day in the year. Tomatoes grown under glass make their appearance in our metropolitan markets about Christmas, and continue to be offered until the Florida and Bermuda crops become plentiful.

Many improvements in the methods of forcing, as well as in the selection of varieties best adapted for this purpose, have been made within the last few years. Our illustration represents a section of one of the most successful forcing-houses in the country, that of Mr. Pierre Lorillard, Jobstown, N. J. The manager of the place (Mr. John G. Gardner) raises all his plants from seed, as he considers this method less laborious than to propagate from cuttings. In the latter case the plants require much care and attention, so that they root rapidly, and receive no check in their growth, else they become stunted and will never attain the healthy vigor of seedlings. The seeds are sown in shallow boxes, and when the seedlings are of proper size they are transplanted into two-and-a-half-inch pots. After they are well rooted they are shifted into five-inch pots, in which they remain until flower-buds appear, when they are transplanted into ten-inch pots, or fruiting boxes. The side of the plants on which the buds form is turned to the south, or the sunlight. A continuous supply of plants is kept up, by making a sowing every two weeks, thus providing sufficient young plants to replace those that cease fruiting. The first sowing is made early in September. The soil used for potting consists of equal parts of common garden soil and well-rotted stable manure.

SECTION OF TOMATO FORCING-HOUSE.

Each plant is trained to a single stem, by removing all lateral shoots as soon as any appear. The stems are trained to perpendicular strings stretched from the pots to the roof of the house. The pots are placed twenty inches or two feet apart, so as to allow free circulation of air around them, and to admit all the light and sunshine possible. When the bunches of fruit have grown to the size of hens'-eggs each bunch is supported by a piece of matting fastened against the main stem, to prevent the breaking of the fruit stems. To insure sufficient dryness of the atmosphere, the elevation of the forcing-house should be not less than fifty degrees. Dry air around the plants is essential to success, else the pollen will not develop sufficiently for complete fertilization. In houses—where neither winds nor insects can assist in the distribution of pollen—each plant should be tapped with a padded stick once a day, about noon, when the air is dryest. This will, in some measure, furnish a substitute for the natural means of scattering the pollen.

The only variety forced by Mr. Gardner is the Lorillard,—an illustration and description of which has appeared in a former number of the AMERICAN AGRICULTURIST,— as experience has proved to his satisfaction that no other kind is better adapted for forcing than this. Mr. J. Boyd, gardener to Vice-President L. P. Morton, informs us that, last winter, from two dozen plants of Lorillards he cut at an average two hundred tomatoes per week. His plants were started in a rose-house; when they commenced to flower they were removed to an early grapery, and plunged into the border. The general treatment and training were the same as given above.

VAGABOND FARMERS.

JAMES K. REEVE, OHIO.

I confess my kinship with the brotherhood in remembrance of boyhood days, when luscious blackberries, that neither I nor any man had planted nor tended, tempted me from school and my books to the surrounding hill-sides. Such berries as those were! The thorns and brambles, and the fear of the teacher's rod, gave them a flavor that the cultivated Lawsons and Wilsons of to-day never have. Many a free, careless day have I spent among those hills, and many a basketful of the ripe fruit have I gathered, earning thus my first money returns from the products of the soil, albeit not by its cultivation. Aside from going berrying, an occupation with which most of our young readers are familiar, there are two products of the soil, which, although they are neither planted nor cultivated, but, like Topsy, "just growed," still furnish somewhat irregular employment to large numbers of the rural population in certain sections. They hold out the same vagabondish enticements that allured us to the woods, long ago. While some work must be done, it is of a happy-go-lucky sort that will neither hurry nor worry one. There are no weeds that must be got ahead of; drought will not spoil the crop nor rains interfere with the harvest. Though vagabondish the life is, or because it is so, many an honest, stalwart fellow would rather go "sang-hunting" (as digging Ginseng is called in the vernacular) or gathering sumac leaves, than to follow the plow all day, without regard to the relative compensation. The word Ginseng is said to be Chinese, and the plant is said by some authorities to be so called from its resemblance to a man, or a man's thigh. By others it is said to signify the first of plants. Its use is confined almost wholly to the Chinese, who value it highly as a medicine, and attribute supernatural curative properties to it. With them it is in this sense truly the first of plants. The more nearly the shape of the root resembles the human form, the more highly do they prize it. Among the presents given the

Emperor on the recent occasion of his marriage, gifts of Ginseng were a prominent feature. Some of the specimens sent him were valued as high as $250 per pound, form, color and curing being the determining features of the value. As it is worth from two dollars to two-and-a-half dollars in our market it will be seen that its value is materially increased by selection and foreign shipment. The root is found principally in the northern part of Asia and in our own Northern and Central States. It grows upon the hills and mountains, in wild spots, and amid the densest shade. It has been cultivated to some small extent, but as three seasons are required for it to mature, and it must be constantly shaded during summer, these difficulties have deterred from any extended work with it.

The Sumac plant is familiar to every boy who roams the woods or country lanes. The gathering of its leaves, which contain tannin or tannic acid, and which are largely used in tanning and dyeing, is more of a systematic industry than ginseng digging. In Virginia and some other of the Southern States a good deal of the surplus labor is thus employed at certain seasons, the leaves being baled and shipped to distant cities. The American article has been of less commercial value than that imported from Italy, as it was thought to contain less tannin, until a few years ago, when the Agricultural Department sent a man to examine into the matter, who after some months of experimenting, found that in June the leaves contain their maximum of tannin and are most valuable if gathered then; more so, indeed, than are the imported leaves at their best.

There are some who subsist almost wholly by means of these occupations, so that for the major portion of the year it may be said of them that "they toil not, neither do they spin."

THE VALUE OF FRUIT TREES.

R. K. JAMES, OHIO.

"A good fruit tree is worth fifty dollars," we heard an old farmer say recently. If this is true, an orchard of one acre containing fifty trees should increase the value of the farm upon which it is situated by the pleasant sum of $2,500—less, of course, the original value of that individual acre. While it might be difficult to find a purchaser who would accept this valuation, my own experience inclines me to the belief that the farmer's assertion was not far from right. A money yield of three dollars per annum from each tree would give six per cent upon this capitalized value. It is a poor tree that will not average this, even allowing for off years, and off years are not so frequent as to alternate regularly with the bearing ones. A healthy tree, properly cared for, will give a crop two years out of three that will pay for harvesting. Occasionally a tree will give a crop that will pay the interest for many years in one.

An Early Richmond cherry tree paid me last year eight dollars, besides the fruit used at home, which was sufficient to pay entire cost of gathering. From a sweet cherry tree this year I sold three-and-one-half bushels at two dollars per bushel.

Two Chickasaw plum trees, growing so closely together that their branches intertwine as if they were one tree, the two covering a space of about five hundred square feet, frequently pay ten dollars in a season, which would be at the rate of over $800 per acre. A pear tree near by yields ten bushels in a good season, and one dollar per bushel is not an unusual price. Three early apple trees this season gave over fifty bushels, which sold at from eighty cents to $1.20 per bushel. The trees were so full that I had to commence picking while yet very green, to save the limbs from breaking. Yet the same trees last year gave a crop that paid more than six per cent upon a value of fifty dollars each.

These figures are not exceptional nor peculiar to a specially favorable locality, but are such as may be attained almost anywhere in our broad land if discretion is used in the selection of varieties, and good care taken of the trees from the time they are planted.

It is true that the above figures are not obtained from a regular orchard, but from a few trees upon a village lot. Yet the same average results may be had from small orchards in which a variety of fruits are grown, and so arranged that the bearing period will extend over a long season.

Selecting Dairy Cows.—Farmers are apt to use too little care in selecting cows for the dairy. Some seem to think a cow is a cow, whether she will make one hundred or two hundred pounds of butter in a year. But it costs just as much to keep a cow that will make only one hundred pounds as one that will make twice as much. I would say to my brother farmers, invest in good cows, give them plenty to eat, with good care, and they will doubly repay for the labor of selecting and keeping.

STAUNTON HITCHCOCK, Vermont.

THE ROSE-MALLOWS. (*Hibiscus.*)

Among our native flowers there are few, if any, more showy than the various species of Rose-Mallow, or *Hibiscus*. Their conspicuous character is not alone due to the flowers, often of the largest size and the most brilliant coloring, but the plants themselves are mostly stately in aspect, with ample and bold foliage. Of the name *Hibiscus*, which Linnæus gave to this genus, neither the derivation nor meaning are known. It was in use by the ancients for a related plant, the marsh-mallow, and was adopted by Linnæus for a different genus of the same family. These plants belong to the Mallow Family, the *Malvaceæ*. This is a large family, members of which are found in all climates except the coldest. The plants generally abound in mucilage, with no noxious ones among them, and a strong fibrous bark. One species of *Hibiscus* yields the tying material known as Cuba bast, while the hairs which surround the seeds of *Gossypium*, originally of the East Indies, afford the most important of textile fibres in cotton. Our flower gardens and greenhouses are indebted to the Mallow Family for many ornamentals, among the best known of which is the stately hollyhock. The genus *Hibiscus* is estimated to contain about 160 species, which are largely natives of tropical countries. Within the territory of the United States there are, native and introduced, some fifteen species. One of these grows as far north as Canada, but the greater number belong in the Southern States, some extending into Mexico. One is found on the Atlantic coast, and one on the Pacific coast. Having received several plants from a friend who makes a specialty of cultivating native plants, we have learned the value of the species of *Hibiscus* as ornamental plants; all the late summer and early autumn our garden has been gorgeous with their profusion of flowers, to the delight of our neighbors as well as ourselves.

We give the most striking species, in an engraving made from our own flowers. The one on the right hand side of the engraving is the well-known swamp rose-mallow (*Hibiscus Moscheutos*). This has the widest range of any, it being found in nearly every State, especially within the influence of salt water. On that broad stretch of marsh-land known as the "Hackensack meadows," which the trains of the Erie and other roads frequently cross, carrying passengers to the far West as well as others to their suburban homes, this plant is seen in great abundance. Its stems are in clumps, three feet or more high, with large downy leaves, and conspicuous, hollyhock-like flowers, about six inches across. The flowers vary from rose color to pure white, and with and without a crimson center. Though naturally a marsh plant, it succeeds admirably in the garden. We have seen it in several old gardens along the Hudson under the name of *Hibiscus palustris*. Many of the early botanists, including Linnæus, tried to make two species of our common one. Torrey & Gray, in the "Flora of North America," (1850) declare: "From numerous observations we are convinced that *H. Moscheutos* and *H. Palustris* are not distinct species."

The species on the lower left side of the engraving is the miliary rose-mallow, *Hibiscus militaris*. This very peaceful-appearing plant gets its warlike name from the shape of its leaves, many of which the botanist calls *hastate*, or "halberd-shaped." The ancient halberd was a sort of cross between a battle-ax and spear, with which foot-soldiers could both chop and thrust at their enemies. This weapon is said to be entirely out of use, save in some courts in Scotland, where the attendants carry them as a mark of dignity. The plant of *H. militaris* is of rather slender habit; its flowers are four inches or more across, of a pale rose, or flesh color, with a darker center. This species is found from Pennsylvania westward and southward, and though not so showy as some others, is a very pleasing plant in cultivation.

The plant in the center of the engraving is the "scarlet rose mallow" (*Hibiscus coccineus*). Aiton, formerly of Kew, saw fit to call this *H. speciosus*, an appropriate name enough, but that is no excuse for ignoring the original name. This is the most showy of the species in our engraving, and probably the most brilliant of all our indigenous species. It is a native of Georgia and Florida, but has thus far survived in our Northern garden without protection. Hebaceous plants, even if perfectly hardy, when covered at the approach of winter with a forkful of coarse manure, seem to enjoy it so much, and to come out so much better in spring, that it is worth

while to give, at least those of doubtful hardiness, this simple protection when practicable. The stems of the scarlet Hibiscus grow in the garden to nearly ten feet high. The much divided leaves give the plant a more slender aspect than the others. The flowers on slender stems have their petals narrowed below, and when expanded are ten inches to nearly a foot broad. The color is a deep rich red, and though not a true scarlet, the flowers are very showy and satisfactory. We notice that some English authors speak of this as a desirable greenhouse plant.

An annual species, *H. esculentus*, is cultivated in gardens, especially at the South, as Okra, its mucilaginous pods being used in the popular dish called "gumbo." An annual species of *Hibiscus*, *H. Trioum*, is seen in old gardens, and as an escape from them is called "Bladder Ketmia," and "The Flower of an Hour." Among shrubby species the "Rose of China," *Hibiscus rosa-sinensis*, was formerly much prized as a greenhouse plant. Its brilliant scarlet flowers have not been exceeded in beauty by many more recent introductions. The shrub known as "Rose of Sharon," *Hibiscus Syriacus*, is from the Levant. It is hardy and has produced a great number of double and single forms with handsomely-marked rose and purple flowers. There are also several forms with variegated foliage. One of these, Buist's, is one of the most prominent variegated shrubs we have grown.

One who examines the structure of the flowers in the Mallow family would be warranted in assuming that if there were ever flowers constructed to facilitate the operations of the hybridizer, it must be these. Notwithstanding this appearance, they have been found in practice to be among the most difficult to hybridize. Mr. A. S. Fuller, who has experimented largely in hybridizing species of Abutilon, fully describes, in his work on the propagation of plants, his successes as well as the many difficulties met with. Notwithstanding that there have been failures, failures in matters of this kind, which we may hope to overcome by care and patience, should act only as a stimulus and encouragement to the ambitious horticulturist, and we hope that some one may undertake to hybridize our native species of *Hibiscus*, and meet with abundant reward. Many of the most beautiful and desirable flowers of our gardens and conservatories are the results of skill and patience in hybridizing.

NATIVE MARSH MALLOWS.

Daisy Mat.

Those who have given attention to the article describing fancy mats in a previous issue of the AMERICAN AGRICULTURIST know just how to proceed with a daisy mat until it is ready for the flowers. All that was said in regard to arranging the pansies, and fastening them in among the moss, will apply as well to daisies, except that the stems of a few small ones should be left a little longer, so that, instead of seeming to peep out just

FIG. 1. FIG. 2. FIG. 3.
METHOD OF MAKING PETALS.

on the surface, they may rise a little above the moss, and turn their cheery faces this way and that above it. A small mat for a tiny bracket is very handsome made of moss long enough to droop over the edge, and almost conceal its support, with several daisies in a cluster rising from the moss at one side, as though just picked and placed there by some tasteful hand.

For white daisies, choose pure white zephyr, not tinted in the least, for the petals; clear yellow for the centers; and wire like that used for the pansies. Cut some of the wire into three-inch pieces for the petals; take four strands of white wool, any length; fold a piece of wire in the middle over the wool, about an inch from one end (see Fig. 1), and twist the wire tightly, close up to the wool; take one strand of the wool and wind it closely about the wire several times, covering it completely; turn the long strands over the short ones (see Fig. 2); draw all down evenly on the wire, side by side—none crossing over others—and wind fine white thread closely around wool and wire together (see Fig. 3), leaving a smooth, narrow petal, not over three-quarters of an inch long, above the thread—it should not be over half an inch in length for a small daisy—and cut off the wool. Make from ten to twelve petals, according to length, for one daisy.

Take a piece of wire six inches long, and seven

FIG. 4. RAVELED MOSS FRINGE.

or eight strands of yellow wool, and make the center as for pansies, only larger, and shear it off about half an inch from the wire. For a medium-sized flower, use ten petals; arrange five of them evenly around the center so that nothing but the smooth surface will show, and wind dull green wool a few times around; place the remaining five so that one will appear in each space between the first five, with outer points in an even circle; wind the green wool evenly down over the thick portion below, and to the end of the stem, where it should be fastened by the wire.

Make some smaller than others; curve the petals of a few, but leave the greater part of them nearly flat; fasten two or three together by twisting the stems, as shown, and they are ready for their place in the mat.

Choose deep golden yellow wool for petals, and rich dark brown for centers of yellow daisies, which may be larger than the white ones if desired; the center should not be sheared flat, but be made very full, and rounded up over the top. A cluster of long-stemmed daisies, white or yellow, look very prettily mingled with light, feathery sprays of dried grasses, or with drooping pressed ferns, for a winter bouquet.

Are there not many among the readers of the AMERICAN AGRICULTURIST who love to make objects of beauty from seemingly useless materials?—those who like to utilize bits and scraps that others would consign to the rag-bag? I have seen a pretty mat that looked like a genuine bed of moss; soft, bright and crisp, and very durable, with nothing about it to betray its lowly origin, yet it cost but a few cents. If you will agree to wait until you have seen one before scorning the humble material from which it is made I will whisper the secret to you. The moss was once a white home-spun-wool stocking, which, after having done good service as such, had been thrown aside with white wool rug pieces, and with them colored a deep, rich green with package dye. Being somewhat clouded and mottled, it seemed good for nothing, but was saved because of its beautiful mossy shade.

Fig. 4 shows how it was afterwards converted into moss, with very little labor. Beginning at the stocking top, it was cut lengthwise into strips three inches wide; each strip received two rows of firm machine stitching close to one edge, as shown in illustration, and was then raveled as far as the stitching would permit, thus forming strips of moss fringe with a narrow heading, which were used just as were the knit zephyr strips previously described. The mat was a decided success—pronounced by some even prettier than zephyr—and its owner has given it an honored place in her pretty parlor, where, alas!—like so many in this

FIG. 5. DAISIES READY FOR MAT.

world of change—in its exalted position of ornamental ease, it has seemingly forgotten that it was ever obliged to "walk afoot" in obscurity.

Pretty Window Decorations.

There is nothing that so makes, or mars, a room as its window decorations. Heavy curtains in warm weather, or even in winter, in very small rooms, give a stuffy look and make one feel as if gasping for air. One of the daintiest and freshest of curtains for either bed-rooms, sitting-rooms or home parlors, is dotted Swiss. Loop back with ribbons (if money is no object), but unless you can renew these whenever they lose their freshness, it will be cheaper to buy the brass chains, which come in twisted links, and are very tasteful, at twenty-five cents each. Next to Swiss comes fancy scrim, which may be had from seven cents a yard up, with open stripes of "drawn work." Madras is more expensive, but, if you do not tire of it, is quite as cheap in the long run as Swiss, which must be laundried. It comes in subdued shades and in rich oriental patterns, and can be made to harmonize with any surroundings. Cream cheese cloth is pretty until it loses its freshness, but is not so desirable at six cents as the fancy scrim, which has more dressing. The former soon becomes limp and stringy. Sash curtains must be of soft material, such as mull, Madras or China silk. Cream, yellow or shell-pink, give the prettiest effect, suggesting the golden glow of a sunset, or the rosy tint of a sunrise. For bedrooms, use some material that can be laundried. Kensington crepe, a sort of fleecy fabric, is very sheer, and pretty for bedrooms or sitting-rooms. It is a cotton material, a yard wide, and sells for fifty cents a yard.

Embroidered "Hug-me-tight."

The lounge-pillow illustrated is a large, soft bolster-pillow, designed for comfort and utility, as well as beauty. A wide, easy lounge is now deemed a necessity in almost all rooms devoted to family comfort; but large, soft, easy pillows, so made and dressed as to look neat and tidy and yet admit of careless treatment, are not so common. Pillows for every-day service cannot be used long without becoming badly soiled unless protected by tidies,

PRETTY LOUNGE-PILLOW.

or covers of some sort, which are a constant source of annoyance, they are so liable to be displaced and rumpled up, if not wholly thrown aside.

The embroidered linen "Hug-me-tight" here shown cannot be easily displaced (as its name indicates), and, being an endless cover, the pillow is protected on all sides and can be turned about in any way to fit the needs of the weary one using it. The bolster-pillow, made of material to match the lounge-cover and as long as the lounge is wide, needs no description. The "Hug-me-tight" may be made of a width of linen, or any pretty, washable material, long enough to tightly encircle the pillow; the hems at the sides should be decorated with a row of hem-stitching or drawn work, and any of the pretty pillow designs to be found in every stamping outfit may be embroidered upon it, or, as in our model, floral sprays may be scattered carelessly all around it. The ends may be simply seamed together before the sides are hemmed, or one end, after being finished off like the sides, may be lapped over the other and stitched to it invisibly.

Slip the case on the pillow and secure it with a safety-pin under the hem on each side; and the family, generally, may take naps upon it, or the children toss and tumble it, and it will remain the same—until it has to be removed for cleansing and its mate put in its place.

A Handsome Cover for a Stool.

This plainly-carved stool of ordinary wood, seen in Fig. 1, may be stained and varnished, or gilded, according to fancy. The cushion, made of ticking,

FIG. 1. CARVED STOOL COMPLETE.

is filled compactly either with horse-hair, feathers or excelsior; it is covered around its edges with a puff of plush about five inches deep; then it is nailed on to the seat, finishing it with a woolen ball fringe, with a heading, which may be either sewed on or tacked on with gilt-headed tacks. The cover is embroidered on very coarse embroidery canvas,

as seen in Fig. 2, which shows the original size; over four of the interlacing threads of the canvas with "Daghestan chenille" (a new soft, woolen,

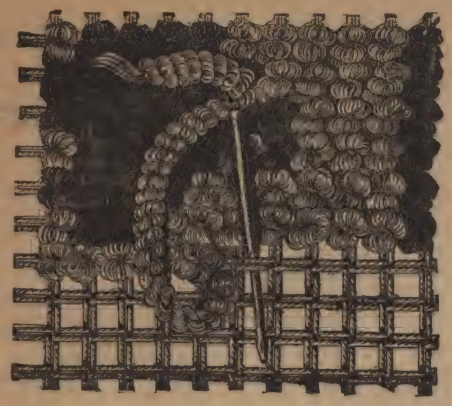


FIG. 2. CANVAS AND STITCH.

chenille-like thread, solely invented to imitate the rich Caucasian or Daghestan rugs, which differ from the Smyrna rugs mainly in their style of design and combination of color). When the embroidery is completed, turn down the edges of the canvas and finish the cover with a thick silk cord, as seen in Fig. 1; then fasten it over the cushion, and decorate it at the corners with chenille balls and tassels. A special needle (Fig. 3.) had to be invented for this embroidery, the eye of which is a hook, into which this thread is laid; then the slide on the needle is pushed over it to fasten it, which makes it resemble a machine needle with a ring to it, as seen in Fig. 2. Our design (Fig. 4) is executed in two shades of green, dark and light, the solid black squares in the pattern standing for the dark, and those with the fine horizontal lines for the light shade. The figures are worked in three shades of

FIG. 3. NEEDLE.

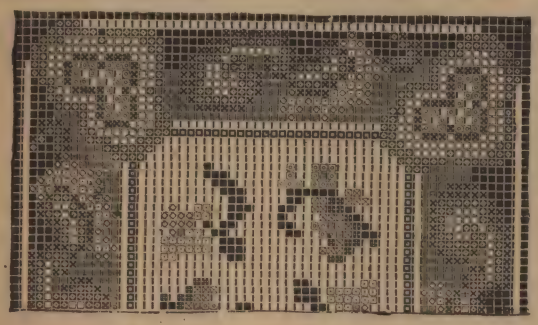


FIG. 4. DESIGN OF CUSHION.

brown, three of blue and three of red. The ground of the center, represented by the straight lines, is worked in maize (corn) color. Rugs may be worked in the same manner.

How to Avoid a Cold.

Curing a cold is not always easy. The great thing is to avoid it. An almost infallible preventive of a cold is a daily cold morning bath, but every one cannot take this. There are some people who cannot endure the shock of a cold bath; and it certainly takes a strong constitution to get out of bed and take a cold bath in a cold room. A warm bath should only be taken at night, or when one can avoid exposure to the open air for an hour or two afterwards. A young friend of ours laid the foundation of a cold from which she never recovered by taking a warm bath and going out immediately after on a chill October day.

Another cause of colds is over-clothing. If you are going to take a long drive on a cold day, there is not much danger of this; but, in exercising or walking, depend on the exercise to keep you warm and wear fewer wraps. It is a bad fashion to accustom one's-self to the use of a muffler. The least exposure without it is sure to be followed by a sore throat, and children, at least, seldom remember to don this superfluous garment with more than fitful regularity. If you are subject to colds never sit and toast yourself over the fire, be it ever so tempting.

Remember that it is not in really cold weather that the severest colds are taken. It is during the treacherous days of a thaw, and during the autumn days, which open so brightly, with a warm sun shining until the middle of the afternoon, when a chill, raw wind arises, which we never seem to learn to prepare for.

Cold feet is a serious reason for the colds of children from babies up. Babies are too young, and most children too thoughtless to know why they are uncomfortable, and so, unless some wiser head orders an occasional toasting of the little feet, colds are the result. Always see that the children go to bed with warm feet.

Wall Dusters.

Canton-flannel wall-dusters, or broom-dusters, as they are sometimes called, are a great convenience when one wishes to thoroughly dust the walls on sweeping day, as every housekeeper who has tried them can testify. For ordinary uses a set of plain bags with draw-strings run in the tops will answer all purposes, but if made like the pair in our

WALL DUSTERS.

sketch they are so very pretty and odd, besides being cheap and convenient, that a set of them would make a very neat and acceptable present for any housekeeper, especially those to whom all pretty things are dedicated—the beginners just fitting up their new nests. Three or more will be needed for a set; to make them like the designs given, unbleached Canton flannel, unbleached knitting cotton, and a little fast-colored coarse embroidery cotton will be required. Make plain bags as wide as the broom and deep enough to just about half cover it, and finish at the tops with plain hems; then with a pointed crochet-hook and the knitting cotton crochet directly into the hem as follows: Begin at the side seam with one treble, chain three, pass a space as long as the three chain, and work another treble in hem, chain three,—go on in this way the whole length of the hem and join; go around four times more and finish with small scallops at the top; run a twisted cord into the upper row of holes and tip each end with a tassel. The lettering, and the branch, and spider-web, or any other chosen design, are to be worked in coarse outline or chain stitch with the red, blue, or brown cotton, the object being to produce not fine work but a showy effect. Fast-colored yarn is as good or better than the embroidery cotton and more rapidly worked; sometimes the crochet work is also in colored yarn to match, but, unless one is very sure that it will endure washing and boiling, the unbleached is better.

Sleeve Covers.

This simple little contrivance for keeping the sleeves of pretty afternoon dresses from being soiled while washing dishes, or during the many little evening tasks that must be attended to by

SLEEVE-COVERS.

busy housekeepers, is so plainly shown in the sketch that it hardly needs description. It is a pair of sleeve-covers made of long stocking-legs that fit the arm closely; they are hemmed at the wrist, and metal fastenings, taken from an old stocking supporter, are sewed to the top, by which they are easily attached to the sleeve and held up securely. A pair may sometimes be cut from the sleeves of an old Jersey waist. If desired they may not fit so closely, but in that case it is well to run elastic in the wrist hems. They are handy to wear over any sleeve, but especially so over the loose, full sleeves now so much worn, holding them back snugly out of the way of water-drops and stains.

Case for a Sand-Bag.

Within two or three years the use of heated sand-bags in place of freestones, or the more comfortable but sometimes treacherous rubber water-bags, has increased in popularity to such an extent that it is needless recounting their merits; but to those who have never used them we would say that, besides retaining heat a long time and being easy to handle, their greatest recommendation is their easy adaptability to any spot or position in which one may wish to place them. Some have an assortment of them on hand, from the long roll and small square ones for the sick-room, to the comfortable "foot-warmers" for general family use. One of the latter is shown in our sketch or at least the outside case is shown. The sand-bag itself is only a plain, oblong case of stout twilled drilling or thickly-fulled flannel, so thick and firm that none of the sand can work out through it, and get soft and yielding; it should not be filled quite full, as that makes it too solid and hard. They are so often soiled by coming in contact with the stove or some of its furniture that it is best always to have one or two cases into which the bag may be slipped after being heated.

SAND-BAG CASE.

The subject of our sketch is such a case. It is made of cream-white linen towelling, soft and thick; it is a plain case a little larger than the bag, open at one end where the front and back are both rounded off to form short flaps, which are folded one over the other and held in place by a button and button-hole. On the front side the following suggestive lines are worked in outline stitch with coarse red marking cotton:

I bring thee hot sands,
Hot sands from the shore,
All golden and glowing,
So shiver no more.

Should the case be a small one the inscription might be only:

I bring thee hot sands,
So shiver no more.

The cases are sometimes made of pretty colored flannel, embroidered with silk, but the towelling or soft canvas, or denim, is better, for they may be washed without injury.

A Pretty Handkerchief Box.

The materials are a paper box, several sheets of tissue paper, preferably dark and pale green, enough pale green ribbon with a picot edge to make a pretty knot, a neat and skillful hand, and the eye of an artist. The result is a pretty fancy article at a cost of thirty cents, that will please your dearest friend by way of a birthday, or Christmas gift, or will sell for as much as you can find it in your conscience to ask for it at a church fair. Let the box be of stout pasteboard, and of an appropriate shape and size. If you could get a new cigar-box, it would be better than one of pasteboard, but I should despair of getting the odor of tobacco out of an old one. Crinkle the tissue paper by twisting it in a tight roll, and then shaking it out. You can buy it crinkled, but the cost is slightly more. Cover the box inside with the pale green paper, sticking it neatly to the edges with mucilage. Cut a sheet of stiff letter paper just to fit the inside of the box; cover this on both sides with the tissue paper, putting a very thin layer of wadding sprinkled with sachet powder on the uppermost

side. Line the cover in the same manner. If you take an ordinary box, you must cut off the rim of the cover and sew it to the back of the box with very stout thread, being careful to leave the stitches loose enough so that the cover will shut easily. Cover the outside of the box with dark green tissue paper; lay wadding over the top to give it a cushioned look, and then cover it with alternate bands of light and dark paper laid across diagonally. Stretch a band of pale green ribbon across the longest way of the box, paint "Handkerchiefs" on it in gilt letters, and fasten a knot of the ribbon a little to the left of the middle. A loop of the ribbon is glued between the covering and the lining of the cover to lift it up by. Glove boxes, using a corset-box, can be made to match.

Two Wives.

M. C. GIFFORD.

They were schoolmates in youth. Each had saved a small sum from her meager earnings; each had married a farmer with limited means; neither had parents able to furnish elaborate outfits.

Nellie Chase fondly loved music; so her first housekeeping purchase was a parlor organ. At the same time practical Emma Payne invested a somewhat smaller sum in a flock of fine-wool sheep. Nellie decided that a wedding reception would not cost much, and the presents would more than pay the expense; Emma declared that she would reserve the reception for her silver anniversary or some other convenient season. Their marriage trousseaus were noticably contrasting. Emma's serviceable black silk and firm brown serge, with the necessary accompaniments, constituted her purchases; but Nellie insisted upon a cream surah with lace drapery, a black satin, a drab wool tea-gown, a Henrietta traveling suit, and hats and gloves in profusion. Emma turned her money into a model cook-stove, with modern utensils; Nellie saw economy in buying a second-hand stove—"it costs so much less and will do just as well for the kitchen." Will Chase approved his wife's choice, for he was stylishly disposed and lacked that depth of mind that would have enabled him to discriminate closely.

The first of April came, and the two young farmers moved on to leased farms and began the great battle for bread. Truman and Emma gave little thought to parlor arrangements, but pantry, kitchen and sitting-room were comfortably and conveniently fitted up, although with no ostentatious display.

On my way to call on Mrs. Chase I passed Truman Payne, who was busily hauling rails to repair a fence; but Will Chase said the wind blew so hard he thought he would have "a good sing;" so my arrival found the Chases occupying the parlor. I did not wish to disturb the "sing," and at my request it went on, Nellie's sweet soprano and Will's fine tenor furnishing enchantment for my ears, while I had opportunity to survey the elegant plush furniture, lambrequins, pedestals, statues, vases, and pictures by the score. An April shower prolonged my stay and compelled me to remain to tea. As we entered the kitchen, which answered the two-fold purpose of cook-room and dining-room, many were Nellie's explanations. "This is the table mother used when she began housekeeping; this set of glassware came with baking-powder; these chairs Will bought at an auction for half their worth; this cake-basket, this pickle caster and that butter-dish were wedding presents. I tell you it pays to make a wedding." The butter-dish suggested the inquiry, "Do you make butter?" "Well, I really know so little about butter-making that I asked old Mrs. Jones over at the next house if she would just as soon tend the milk, and she seemed glad of the chance. I thought getting rid of this work would give me spare time to keep in practice with my music." "You keep fowls, do you not?" I ventured again. "Oh, yes; Will said we could not run a farm without hens; so he bought twenty. He takes care of them; it isn't much work—only feeding them and hunting the eggs."

At the Paynes' Emma tended the poultry, and the first biddy that gave signs of sitting was encouraged by being given a choice clutch of eggs from a pure-blood stock. The designing turkey hens could not evade her watchful eye. The golden butter prints turned out by her skillful hands found ready sale, and in June her sheep were shorn and the one hundred and fifty pounds of wool readily turned into forty-five dollars of golden coin. It did not take Emma long to invest the money, and glad was Truman Payne when his wife handed him the canceled note, though not due, for a cow he had purchased.

When an invalid friend, desirous of seeking the invigorating, fresh, country air, applied to her for board for herself and her nurse, Truman felt that the burden would prove too great; but Emma, believing herself equal to the emergency, convinced him otherwise, and the first rainy day was spent in fitting the "parlor" for Mrs. Gilman. A carpet was too expensive, and really not suitable for the invalid's room; so some lively green paint was applied to the floor, and rugs here and there finished the floor decoration. The light drab paper, unsoiled by former occupants, did service for the walls, and a bedroom suit completed the expense.

Mrs. Gilman soon began to mend. The pure air and bright light of her well-ventilated room soon impelled her to go out into the sunshine, while the delicious cream, the savory soup, the fresh eggs and the tender broilers courted her appetite. Eight weeks' stay changed her to apparent health, and every week added ten dollars to a purse that could well bear the inflation after the bedroom suit had been paid for. Mrs. Gilman now became the direct purchaser of Payne's butter, at city retail price, an item not to be lost sight of by successful farmers.

At Thanksgiving the well-fattened poultry that had made such raid on the corn were exchanged for seventy-five dollars and gave Emma a nest-egg for future speculation. The increase of the sheep-fold was submitted to a city butcher, and this apprisal, with the wool money, showed an income equal to the expense of the purchase of the flock lacking five dollars. This gave the happy couple an incentive to keep more sheep and less cows another year.

The Paynes kept strict oversight to their business; still every Sabbath found them in the church and workers in the school. They rode much, but never with the single motive of pleasure. They believed that

"Pleasures are like poppies spread—
You seize the flower, its bloom is shed,"

but a couple could not have been found that really enjoyed themselves better. Home reading prompted an occasional addition to their library. Economy, not parsimony, was their rule of life, and a true debt and credit account gave them knowledge of their financial standing. Saving makes far greater raid on tact than earning.

Emma's keen business mind conceived many plans, sanctioned or revised by Truman's interested consideration, which when executed proved the truth of the adage: "Two heads together are better than one." Emma prepared several bottles of surplus pickles, that readily exchanged at the grocer's for raisins and spices for winter use. Many another device did this wife carry into execution that gave Farmer Payne encouragement.

There are two forces that compel vigor—the one encouraging success, the other reverse evidence. Will Chase saw before the first year had passed that his wife, though dearly loved, was not the practical helpmeet a farmer needed, so resolved to couple speculation with farm labors, and thus supplement her deficiencies. The Paynes found no trouble in making "both ends meet," but the cycle of the year left an arc in Will Chase's financial circle that demanded a chattel mortgage as a span.

The Paynes desired a five-years lease of the same farm. The contract completed, retired Farmer Bennett chuckled and said: "'You'll be rich enough to buy me out when this contract ends." He had often expressed an approval of their management, and at the happy Christmas-tide gave tangible evidence by the gift of a fine Jersey heifer to Emma, who proved her gratitude, and led him into a pending discussion of the policy of adopting a creamery. "I don't take to this new-fangled notion," said Mr. Bennett, "but talk it over, and if you two pull together I'll bear half the expense." Result—an even start.

Will Chase beat about without a magnet, couldn't find the polestar guide to success, and didn't know whether it was best to remain or look up another farm, with better prospective. A pleasure horse had eaten a fair share of the might-have-been surplus grain, half of his half of the butter went to pay old Mrs. Jones for the making, and the poultry didn't flourish on feed alone. Any denial chafed Nellie's selfish nature as cucumber vines did her dainty hands. She, like many another deluded woman, had looked upon her marriage as the termination of trials—the living problem to be solved by another mind, who must make the rule, carry out the physical illustration, and demonstrate and whenever demanded furnish financial proof of solution. Nellie's detestation of moving helped Will to decide to try the same farm another year, though neither had any special love for the work thus laid before them, and both were of the opinion that "farming doesn't pay." They both ardently loved gay society, and no neighboring dance seemed complete without their presence. Nellie's wardrobe required remodelings and affixes. Will had been tolerably succesful in buying farm produce and consigning to a city commission agent, and the revenue thus gained enabled him to meet the demands of "society."

While society was absorbing the Chases' minds the enterprising Paynes were steadily pushing to completion various small jobs to avert a multitude of cares during the more busy season of summer and insurethe profit of farming.

At the end of the first year's experience we leave these two home-makers—the one fully equipped to drive business, the other driven to business. Musing, after a vista of years, we see the one a happy couple, flourishing under their "own vine and fig tree," with shining heads about them, dispensing sweetest music and calling them that blessed name, "Dear parents." But ah! the music has ceased in the other home, and the husband, mourning the early fall of his wife, exclaims: "Sad and mysterious are the dealings of Providence with me."

Inexpensive House Furnishing.

In everything pertaining to one's home, and home life, it is really the *little* things that are of the greatest importance. It is the *little* acts of kindness that make us happy, their omission that constitutes our misery. It is the attention to *little* details that results in a well-laid table and a well-cooked dinner. It is the *little* touches that a tasteful woman can give to a room that constitutes its real furnishing. You may have rich carpets, costly furniture, pictures and bric-a-brac, and your house may still lack the home look that another far simpler home may possess in an enviable degree.

We were lately a guest at a country house, where the spare room in its fresh and dainty beauty must certainly have been a joy forever. When we complimented our hostess upon her taste, she said apologetically that she could do no better, having very little money. Even to the painting and papering, it was the work of her own hands, and this woman had five children and did all the work of the house, including the boarding of hired men through the summer.

The room was rather large and square, after the manner of country rooms. The woodwork was painted a pale green, or rather a robin's egg blue, and the paper with a ground of something the same shade had wild roses flung over it in careless profusion. It is seldom one finds so pretty a paper at ten cents a roll. If you cannot find your ideal at the village store, wait until you can go to some larger city, or until some friend can get it for you, first sending you samples. The papering of a room is an important element in its furnishing. In fact, it is impossible to make a room look really pretty with a hideous paper on its walls. The floor was covered with plain white matting, with here and there a rug of home manufacture. A home-made lounge, directions for making which this lady said she had taken from the AMERICAN AGRICULTURIST, was covered with cretonne, having a cream ground well covered with conventionalized blue flowers. The chairs were rush-bottomed and a century old. They had been painted with the same color as the woodwork, and the rush seats a cream white. There was one rush-bottomed rocker and one of the high-backed wooden rockers known as "Boston rockers." These latter sell for $1.50. Both of these rockers were cushioned with cretonne, to match the covering of the lounge.

There was no closet, a common defect in country houses built half a century ago. To remedy this a three-cornered shelf had been bracketed in one corner of the room, with a curtain suspended by means of a rod and rings. On the under side of this shelf were screwed double hooks for hanging clothes. A similar shelf under this and about a

foot from the floor, was convenient for shoes or hat boxes. On the top stood an ordinary stone jar or "crock" of a grey-blue shade, with bands of darker blue, filled with daisies, clover blooms and grasses. The shades were of ecru Holland, with sash curtains of dotted Swiss muslin. A valance of the cretonne hung by pole and rings at the top of each window and took away the otherwise plain look.

The washstand and bureau, by the way, were an entirely novel idea to us. A shelf twenty inches wide was bracketed to the wall thirty inches from the floor for the former, and another of the same width, three feet from the floor formed the bureau. These were curtained with cretonne, and had a shelf midway for holding personal or bed linen. The tops were covered with white muslin tacked on, and over this white bureau covers were laid. Above the bureau hung a glass framed in wood tinted blue, and shading off almost to white at the inner edge. This frame had a spray of wild roses painted in one corner. The bedstead, a time-honored affair with high posts, had a valance of cretonne, and a hand-knitted counterpane. Probably not more than ten or fifteen dollars in money had been expended in the furnishing of this room, which to us was far more charming than many we have seen which cost ten times the sum.

Musicians of the Field and Hearth.

MARY E. MURTFELDT.

It is in the order of the *Orthoptera* that we find the musicians to constitute a full field orchestra. Field locusts, popularly known as "grasshoppers,"

MOLE CRICKET. BROAD-WINGED KATYDID.

house, meadow and tree crickets, orchelimums and katydids, are but a few of the "stars" of this numerous troupe. The midsummer heats, which somewhat diminish bird music, afford the most favorable temperature for the resonance of insect music. Throughout the Middle States, East and West, the first "rehearsal" is given about the fourth of July, when all the meadows are a-gleam with the mimic lanterns of the fire-fly. The crickets, orchelimums and the more robust and common locusts alone give the matinees. The locusts climbing aloft on the stems of stout grasses "fiddle" away by the hour, using the thighs of each hind leg alternately for a bow, and the ridged surface of the upper wings for the violin, and they now and then vary this performance by rattling together the margins of the wings in short flights, producing a cortinel-like sound. Meantime, the soft musical burr of the slender and graceful orchelimums lulls the senses, and the merry chirp of the cricket is interjected to mark the time. As twilight deepens one and another instrument is added to the chorus, and where trees are numerous it is often impossible for human beings to carry on conversation at a distance of ten feet. Indeed, last summer I distinctly heard this insect chorus in the night above all the din and roar of an express train on which I was a passenger. With these louder notes sometimes mingles a peculiar, murmurous chirping, heard more frequently from damp, grassy hollows, which may be traced to that rare and curious creature, the mole cricket (*Gryllotalpa*), seen at Fig. 1 in our engraving. This is the largest of the so-called crickets, and is fossorial in its habits, spending its days in digging its underground galleries, and at favorable seasons emerging at night to inhale the dewy air and practise its little tune.

Conspicuous among the strictly nocturnal choristers are the beautiful green locustida, known popularly and poetically as "katydids," which are entitled to more than a passing mention. There is quite a family of them, and each species has its characteristic note and style. Their musical instruments, though differing in tone and power, consist in all the species of a pair of tabourets, situated on the back and forming part of the base of the wings, and in playing the latter are slowly half opened and closed, producing a peculiar, melodious rattle, which, when the movements are rapid, in some of the species, blends more or less into a continuous note.

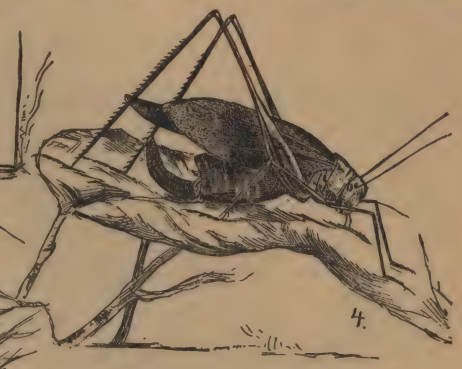
Leading them all in interest is the true or broad-winged katydid (*Cyrtophyllus concavus*), Fig. 2, the only one of the group whose large, convex outer wings entirely enclose the body, and the transparent, lace-like under-wings. In the males the musical apparatus is conspicuous just back of the thorax. It consists of overlapping plates of translucent smoky-brown membrane, with a raised encircling frame and horny cross ridges. As the wings are slightly raised and alternately opened and closed, the ridges of one plate grate against those of the other, and produce distinct sounds, resembling iteration and contradiction, which goes on for hours without apparent fatigue or diminution of enjoyment on the part of the performer—whatever may be the feelings of the listener. To what fanciful mind we are indebted for the translation of these interrupted raspings into the accusation and denial with which we now associate them, not even a legend remains to tell us. Occasionally a poet's inspiration moves him to disclose the secret, but not a single "katy" seems to have accepted the explanation, for to every one he seems to make only this reply:

"I sit among the leaves here, when evening zephyrs sigh,
And those that listen to my voice I love to mystify.
I never tell them all I know, altho' I'm often bid,
I laugh at curiosity, and chirrup Katydid!"

It is a pity, perhaps, that Mrs. *Cyrtophyllus Concavus* is so absolutely dumb. No doubt *she* alone, of all the world, knows what it was that "Katy" did. The cousin that most resembles the true katy is the angular-winged katydid (*Microcentrus retinervis*, Fig. 3. It is this species whose rows of gray-brown, bivalvular eggs are so common on slender twigs and vines, and are also often found on the cords of our window shades or any other convenient string indoors. I have even had them very neatly placed on the band of my sewing-machine—all of which proves defective instinct in a very important matter.

The stridulation of this angular-winged species is more rapid and continuous than that of *concavus*, and has been compared to the "rasping of a stiff quill drawn across a coarse file," but with a more musical quality.

Another less obtrusive, but no less interesting,



NARROW-WINGED KATYDID.

member of this group is the narrow-winged katydid (*Phaneroptera curvicanda*), Fig. 4. Before it attains its wings, this species may often be found on low oak bushes, where it is conspicuous for its bright coloring,—the body being beautifully ornamented on top in yellow and crimson. At maturity its green color is somewhat tinged with purple. Its note is a soft little *zeep, zeep, zeep*, to which its dutiful mate—more favored in this respect than her female relatives—responds with a little musical chirp produced by a sudden extension of the wings as if for flight.

There is another small family of nocturnal musicians which cannot conscientiously be omitted from the list. These are the snowy tree crickets (Fig. 5), chiefly remarkable for the piercing shrillness and loudness of their notes. Of these *Œcanthus niveus* and *Œ. latipennis* are most common. They are small and very delicate in their structure, and are, in fact, a mere diaphanous embodiment of sound. The wings of the males are broad and glassy, and in the act of shrilling are elevated at right angles to the slender body, and vibrated so rapidly as to appear perfectly motionless. I do not know of any sound that will more suddenly awaken one at night or more effectually banish sleep than to have one of these filmy atoms suddenly strike into his piercing solo from the folds of the window curtain, amid which he can only by the closest scrutiny be detected.

Apple Butter.

This old-fashioned and wholesome preserve, or sauce, is still made on some farms, and its preparation is a part of the regular farm work in autumn. The first step in its preparation is to evaporate or boil down a quantity of sweet cider; hence it is often called "cider apple sauce." If there is a large cauldron or set kettle, as there is on many farms, that may be used; otherwise, one or more large kettles are provided with proper support, so that a fire may be made under them. There will be much stirring to be done, and long wooden stirrers should be provided. A barrel of cider is boiled down to eight gallons. While the cider is being boiled the apples are prepared. Formerly this was done by "paring-bees," at which the neighbors assisted. Now, there are numerous apple-parers, some of which not only pare, but core and quarter the apples, and do the work very expeditiously. The apples should be sweet ones; of a kind that will cook tender. From two-and-a-half to three bushels are required for each barrel of cider. The cider being first evaporated, the apples are added, and the whole boiled together until it becomes jelly-like. At this time there is danger of scorching, and it must be stirred continually. Some makers, when the sauce is done, add to it cinna-

mon and allspice, but the majority prefer it without the spices. While still hot, the sauce is transferred to kegs or other wooden vessels, or jars of stoneware are used. When well made, the sauce keeps a long time.

Knowledge Brings Happiness.

A. MONTCLAIR.

The other evening I heard a young lady say, "I never sew, I do not darn my own stockings. I purposely do not buy needles lest if I have them handy I shall use them." Now a stranger would have thought that a very senseless remark, and have accredited the young woman with the very smallest amount of brains, but I knew her to be a well-educated, bright, helpful, self-supporting girl. Knowing the ins and outs of affairs, I could see at once just how this state of things had come about. The family until a few years past had been wealthy, and the children had been edueated to the utmost helplessness possible by having everything done for them. Reverses came, and lo! nobody, from the father up or down, knew how to do the least thing toward gaining a livelihood.

The mother became an invalid; "Life was too much for her" and she succumbed, took to her lounge, and—whined. She had never been taught to manage a house, so she tried to amend this fault in her daughter's education, and from her vantage ground of the lounge gave orders that she could not execute herself, and that were unreasonable, thus laying a sure foundation for a hatred of housekeeping on the part of that young lady. She had never learned to sew, and so she recognized that her daughter should profit by the mistakes of her own life, and become an accomplished needlewoman, consequently, she so nagged her about sewing that the poor girl, in sheer despair, determined to find a way of making her own living that would take her out of this home atmosphere.

She learned telegraphy, and being unusually bright holds a position that enables her to hire her sewing done. We had a long chat, and she confessed to me that she would really have enjoyed housekeeping if she could have learned or practised it under favorable auspices, and when I saw her pretty room in a modest boarding-house I could tell at once that she was a "born housekeeper," but had been spoiled in her younger years.

Now, mothers, if you want your girls to be good housekeepers, make the work pleasant for them. Don't nag. Don't say, "I never saw such a careless room, or such an untidy girl," but show her that you take an interest in her room, and help her to make it pretty, and she will soon learn to care for and keep it neat. The time to begin to make a girl a good housekeeper or to teach her to take care of her own clothes is when she is a *little* girl. As soon as her tiny fingers can hold a needle let her at least *think* she is helping you by hemming a duster, or a kitchen towel. If she has a rent in her dress or pinafore, if possible, show her how to mend it. It will give her the habit of neatness. If she has a shoe-button off, don't sew it on for her—let her do it herself. There are very few young children who are not pleased at the idea of helping. My little boy of six asks constantly for "work, real work," and is never so happy as when he is dusting, or picking shreds from the carpet, or carrying wood or coal, or helping arrange the books, or some of the many things which he feels are really helping me.

Providence has never blessed me with a daughter, but if I had one she should know all the things that go to make a woman a good wife and mother before she ever painted a "panel," or played a sonata of Beethoven. "A man can't dine off a crazy-quilt, or sup off a decorated snow-shovel."

There are few girls in whom a love of housewifery is not implanted. It may want fostering and bringing out, but that is the mother's lookout. My young friend of whom I spoke in the beginning of this article can no longer say she "never sews." She has joined my Dressmaker's Club, which meets every Saturday afternoon for sewing and mutual improvement. She promised at first to come and read for us, but soon became interested in the pretty things made for our own adornment by those of us who could not have afforded to hire them made, and last evening she called on me in a pretty dove-gray dress faultlessly fashioned, "and all the work of my own hands," said she.

It seems to me the very acme of unkindness for a mother to let her daughter grow up thoughtless and inexperienced—ignorant of the very things which in a short time she must suffer for not knowing. In one hour a day spent in home duties of various sorts a girl could, before she is fifteen, acquire a thorough knowledge of all the work that goes to make the domestic machinery run smoothly. You cannot always be present to do everything for your daughter, then why do it now? It will only make it the harder in after life. But you say she studies so hard. Then see to it that she has fewer studies. There is not one of them so important as the knowledge of cooking, or nursing, or washing and ironing, for even if your daughter marries a rich man she will be all the happier for knowing how to direct her servants.

You want her to have a good time now, and be free from care? Oh, thoughtless mother! You are laying up mountains of care and "hard times" for her in the future. Make her a self-helpful woman, and she will know how to help others, and you will have laid the surest foundation for her future happiness and well-being.

Thanksgiving Recipes.

Roast Spareríb.—A roast spareríb, with apple butter, was never absent from the bountifully-spread tables of an old-fashioned Thanksgiving dinner. Aside from the fact that roast meats (which now-a-days are baked meats), do not taste as they used, few modern cooks know exactly how to prepare a spareríb. Cover the meat with a greased brown paper until about half done, then remove, and dredge with flour. It must be basted frequently. About ten minutes before it is done, sprinkle fine bread crumbs seasoned with powdered sage, pepper, salt, and a very finely minced onion, over the surface. Baste once during the ten minutes that it must remain in the oven. Lift out the meat to a hot dish, free the gravy from fat, thicken with browned flour, season to taste, and send to the table in a gravy boat.

Apple Butter always accompanied this dish. Reduce by boiling sweet cider until you have a thick sirup; add apples, and about one-quarter their bulk in quinces. "Stew all day," said the old New England lady who gave us this recipe. "How do you keep it from burning," we asked innocently. "Stir it almost constantly," was the matter-of-fact reply. Under the circumstances prudence would suggest making a supply to last all winter. It keeps well in self-sealing jars.

Baked Chicken-pie.—Take six chickens and joint as for a fricassee. Put them over the fire with thin slices of salt pork, half a pound in all, and barely cover with cold water. Bring quickly to a boil, and draw to the side of the fire where they will just simmer. When tender roll out your crust about a quarter of an inch thick, and line a large tin or earthen dish; lay in the chicken with butter and seasoning between each layer; put on the top crust, but add no juice until the pie is done. Then through the hole in the top, using a funnel, pour the juice, properly thickened and seasoned, until the pie is full. This pie is delicious hot or cold. There is no soaked crust, and the gravy turns to jelly when cold. It is a famous standby for the larder at holiday seasons.

Pumpkin Pie.—The secret of the excellence of the old-fashioned pumpkin pies lies in the fact that plenty of eggs and the richest milk was used. They were made very sweet with molasses alone, and the only spice used was ginger. The modern cook destroys the natural flavor of the pumpkin with all the spices and condiments that would go to flavor, and rightly too, a mince pie, but which in pumpkin pie are quite out of place.

Indian Pudding.—The real New England pudding requires first of all a large dish. Take five tablespoonfuls of meal rounded, not heaped, to each quart of milk. Bring the milk to the scalding point; pour over the meal. Make very sweet with molasses, add a pound of fruit for four quarts of milk, and a generous and rich mingling of many spices with a tablespoonful of salt. Bake slowly many hours.

Oranges with Jelly.—This is a very pretty modern invention for decorating the holiday dinner table. It is just as good to eat as it is to look at. Take large, fine oranges and cut a small round piece from the stem end, then with your finger or a small bone mustard spoon, gradually loosen the skin from the pulp, drawing the latter out through the opening. Lay the skins in cold water until wanted. Make an orange jelly with the juice of the oranges and enough lemon juice to give the right flavor; drain the skins, fill with the jelly, stand them on little egg or custard cups, if necessary to keep them upright, and stand away until cold and firm. Then cut into halves and arrange on a dish with some pretty green leaves. In making the jelly be careful to get it firm enough. The rule is, the juice of four or five lemons, two quarts of water, a package of gelatine and a pound and a half of sugar. Put the gelatine to soak with orange juice instead of cold water, then add the sugar, the balance in boiling water, and as much lemon juice as you need. You can put glace fruits cut in bits in these by partially filling the orange rind with jelly, letting it stand until firm, putting in a layer of the fruits, and then adding more of the jelly.

Cranberry Sauce.—There is a wide difference between cranberry sauce and cranberry jelly. For the former pick over a quart of the best berries and put them in a porcelain kettle with a pint of boiling water. As soon as they begin to "pop,"—keeping the kettle covered meanwhile—take from the fire, press through a colander and stir in while hot one pound of granulated sugar.

Suggestions in Decoration.

The Parlor Question.—Fanny Kaplan, New York city: If your carpet is torn and your floor nice, stain it as described in "The Prettiest Little Parlor," in the March number of the AMERICAN AGRICULTURIST. You can use light or dark oak, mahogany, or walnut stain as you prefer, and they will tell you how to do it at any large paint store where you buy the stain. If the carpet is an ingrain, and too much worn, cut it in inch strips lengthwise, ravel both edges for one-third of the width, sew the strips together, wind into balls and take to a rag carpet weaver, where you can have it woven into two or three breadths, as long as your room will require. Sew them together, and you will have a serviceable and handsome rug. If it is a Brussels, sew the best parts into a rug; this will need to be tacked down. If you own the house, paper the walls. We saw very pretty paper the other day for six cents a roll. You can do it yourself. We are sorry you have a parlor suit and marble tables. They are generally very unesthetic. Watch your opportunity, and buy pretty covers to throw over the tables. Very handsome ones, in dark blue, old gold, dark red or terra cotta can be bought for $1.35 to $1.50, according to the size. They have scroll work and irregular designs in black, outlined with tinsel and gold threads. If you must have the bureau in the room, and it is not a handsome article of furniture, stain it to represent dark mahogany, get brass handles for the drawers, and have your brother make a set of shelves to hang over it for your books. Nothing furnishes a room so much as books. Pretty little bamboo book shelves can be had in New York for from 75 cents to $1.50 each, of two or three shelves. Cover the bureau and the mantel with pretty scarfs, as Cicely did the table. You might make all the changes we have mentioned with $10, since you live in New York, if you take advantage of the bargains that are always to be had there. Don't make the mistake of looking for cheap things in the "cheap" stores. You will get better goods for the same money at reliable houses.

Table Scarf.—This may help our correspondent who wishes for a new idea for a table scarf. For a scarf one by one-and-one-half yards long, choose a piece of cretonne one-third of a yard wide with a light ground, and leaves and branches in different shades of green. Outline this design with embroidery silk, crewels or flax, finish on either side with a strip the same width, one of pale, the other of dark green plush, and line with shell pink or terra cotta satine. Sew a dozen little silk balls on either end.

The Garret.

Early in autumn the garret should be overhauled. A defective flue and easily-combustible stuff in the garret are responsible for many a conflagration. The garret is such a convenient receptacle for articles for which there may be a possible use in the future, but which must be stored out of sight, that every year it will be filled with stuff that ought to be burned, but not with the house. Now, when the season of winter fires is near at hand, clean out all articles in the garret not clearly needed. In case of doubt, give the garret the benefit of it, and remove the article. Set easily-ignited things as far from the flues as possible, and when this is done, examine the flues and remedy all defects.

Three Brave Men.

MARGARET WILSON.

"Afraid! Just like a girl! Why, we'll take care of you. Nothing can happen to you with three men in the house."

So spoke the eldest of the "three men," aged twelve; and Dick, the second, copied his gruff bass tones to ask:

"What is there to be afraid of, I'd like to know?"

"Well, there's robbers—and there's bears—and there's—there's pockerpickets," Nelly answered, timidly.

"I just wish the pockers would come. *I'd* fix 'em," said Bertie. He was not much more than a baby, but he looked very big, striding up and down "with his battery chest on," as his father used to say.

Dick climbed up on a chair and took down an old sword from its nail on the wall.

"This is what I'll do if bears or robbers come along," he cried, and brandished it in such a fierce way that Nelly began to put more trust in her protectors.

"That's rusty: I'd rather have the gun," said Fred; and taking his father's rifle from its corner he shouldered arms, marched to the door and presented the muzzle to the keyhole.

"Hi, there, Mister," he shouted to an imaginary burglar on the other side of the door, "no admittance here without leave!"

What would Major Barrie's state of mind have been just then could he have known that his rifle was in Fred's unskillful hands? As it was, he felt no uneasiness, believing that Bridget, the big Irish servant, would take good care of the children during his absence of a day and a night.

Biddy was not so trustworthy as he thought. After the tea dishes were washed, she went out with some "cousins from Oirland," and left the four little ones alone. They didn't mind that, at first. The three men had all the better chance to show their courage. Sitting around the fireplace, they told all the stories they had ever heard or read of wonderful adventures and hairbreadth escapes. This was all very well as long as the least bit of daylight lasted; but by and by there was nothing but firelight in the room, and you know how such stories make you feel, told in the firelight. They began to cuddle closer together and to speak lower; and if a coal fell in the grate, or a mouse stirred under the floor, they would all start and catch hold of one another.

"I wish Biddy would come back," whispered Nelly at last, with a little shiver.

"Listen! That must be her now," said Fred, as they heard the latch of the gate click.

"Oh, I'm so glad," Nelly exclaimed, jumping up and running to the window. The gate was at some distance from the house, but by the light of the snow Nelly could see something that made her scream.

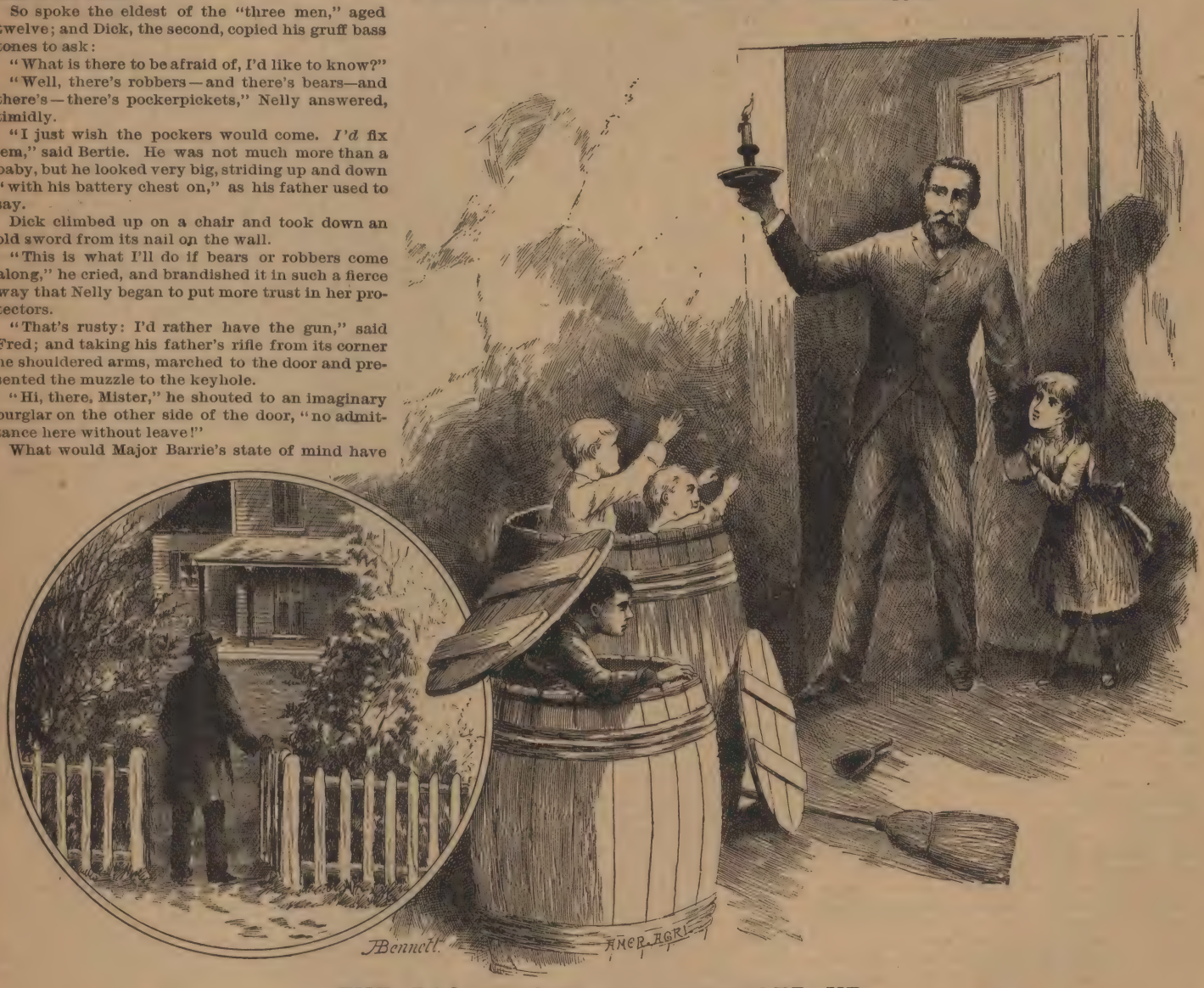
"Oh, boys," she cried, "it isn't Biddy! It's a man! It's a man!" and she ran and clung to Fred.

You should have seen our three brave men then. They tumbled, helter skelter, out of the room, almost knocking one another down and screaming wildly. They found their way somehow to the closet under the stairs where the flour and apple barrels were kept. The apple barrel was almost full, but Fred scrambled in and curled himself up so that nothing could be seen over the top. There was more empty space in the flour barrel, and Dick climbed in there and whispered that there was room for one more. Poor little Bert was trying to swarm up the outside, and crying because he couldn't. Nelly gave him a helping hand and soon had him in. She pulled the covers over the barrels, having presence of mind to leave a little breathing space. Then she tried to creep behind; but no, they were close against the wall. There she was, left alone and defenseless—all her protectors barreled up!

There was no time to look for another hiding-place, for just then the door opened and shut, and a man's step sounded in the hall. Nelly's heart was beating very quickly; she began to cry a little. The footsteps could be heard now in the room the children had just left, and now on the stairs—and how the four little prisoners shuddered as they passed directly over their heads! Then they could be heard coming down again. Next, a match was struck. None but Nelly heard that sound, the others being covered up. The next sound seemed to her the most joyful she had ever heard in her life. It was her father blowing his nose. The next moment she was in his arms, bringing him to the closet and calling out all the way,

"It's Papa, boys; it's Papa!"

Sure enough, the burglar from whom they had been hiding was no one more dreadful than Major Barrie, who had got through his business earlier than he expected. The sight he saw when he held the light to the closet door astonished him. The cover of the apple barrel slowly rose, and first an elbow, then a head appeared. The cover of the flour barrel shot up, two white heads bounced out like Jacks-in-the-box, and four white arms were stretched toward him. I needn't tell you how overjoyed they were to see him, and how they all hung about him, smearing him with flour and mashed apples.



THE PROTECTORS ALL BARRELED UP.

Biddy was not so glad to see him when she came back, for she had a pretty shrewd guess that she would be dismissed next morning.

To do Fred justice, he was ever afterwards heartily ashamed of the part he had played in the little scene in the closet that night, after all his morning's boasts. It cut him to the heart to think that he had "looked out for number one," as he said, and left the sister two years younger than he to take care of herself. For a long time he couldn't bear to look toward the corner where his father's gun stood, and he didn't eat another apple that winter.

Gum Copal.

Yellow as gold, clear as glass, such is the gum of a resinous tree found in Mexico, Africa, Brazil, Madagascar and India. From it are made the pale

yellow or almost colorless varnishes which painters use, and also some of the best lacquers employed by the Chinese and Japanese in their curious wares. In some places this gum has been found petrified, and preserved in its clear, transparent, golden mass are often found bodies of insects long since disappeared from the living world, as well as some of sorts which are still plentiful. In the Natural History Museum of New York city are some remarkably fine specimens of this petrified gum.

How to Celebrate Thanksgiving Evening.

PALMETTA GOLDSMITH.

With many of us the weary round of work that must be done leaves little time to enjoy the society of our children. It sounds beautiful for a writer to enjoin upon a mother the moral influence it will have upon her children's lives if she romp with them at bedtime, or if she tell or read them stories and so make that a happy hour. But, suppose—and many of my readers will bear me out in the assertion that this is by no means an unlikely supposition—suppose, I say, that it is Tuesday night, and after the many duties of the day, with a teething baby, or an ailing child to nurse or amuse through them all, the poor mother is looking forward to a couple of quiet hours for ironing! Is it not a temptation under such circumstances to hustle the children into the bed, or get them in the quickest way possible? If the temptation be yielded to, I for one shall lay no word of blame upon my poor tired sister.

I think my own mother must have been a remarkable woman. There were six of us little ones. She did all her own work. She made shirts, and coats and vests for father and the two boys. She kept all the girls prettily clad, for country children. The wristbands and collars of the shirts were all stitched by hand. She entertained a great deal of company, most of it of the kind with which country people are familiar, those who find "Dear Mrs. B's cream so lovely—her baked apples and pies, and preserves the most luscious;" but "Dear Mrs. B." never goes to the city to try the delicacies there. Notwithstanding all this work, mother was never too busy to tell us a story—she ironed and told stories, sewed and told stories, made butter and pastry and told stories, and when we were able to write compositions (at least when we were required to write them) mother told us "what to say." Ah! how the dear old memories come crowding over me as I think of all the sweet old fairy tales that I first heard from her lips!

But this was not what I set out to say. If you can't make "the children's hour" happy every night, let something go by the board and do so on holiday nights. Let Thanksgiving be a night of rollicking fun for the children, little and big. In after years when they are away from home, its influences will linger around them still. Your son or your daughter may be kept in the "straight and narrow way" by the remembrance of just one happy home night.

A simple game that even the baby can almost take part in is called "Fish, flesh, or fowl." The leader must stand and say to one, "Fish, flesh, or fowl," then if before he has counted five that one does not give the name of some fowl, he must pay a forfeit. There is lots of fun in this game, for in his effort to think of some fowl quickly, one is likely to get confused and cry out "eels," or "elephants," forgetting that these are unlikely fowls. The leader must talk rapidly for the older folk, but more slowly for the little ones. It will incite the latter to look up all the available names of fowl when they know this game is to be played.

If there is a large party of boys and girls, if cousins or neighbors have been asked in, "The Jolly Mariners" is an enjoyable game. Have the parlor doors opened so as to pass through one door and out at the other. The boys all march round, the one who takes the lead with a handkerchief over his shoulder, and all singing:

"We are a set of jolly, jolly lads,
Who've just arrived on shore;
We spend our days in many merry ways,
As we have done before.
And we will turn around and 'round
And we will turn around,
And he who finds a very pretty girl
Must kiss her kneeling down."

Having chosen his "very pretty girl," and saluted her, he spreads his handkerchief for her to kneel upon, while the girls sing,

"It 's a bargain, a bargain for you, young man.
It 's a bargain, a bargain for you;
You've given your word, now keep it true,
And love her all you can."

Then another lad takes the lead, and the song is repeated until all the girls have been chosen.

There isn't much to be said for the meter or rhyme of these verses, but the boys and girls will not be too critical about that, and those who object to boys and girls of tender years kissing each other, may teach the former to make a courtly bow instead.

"My father's got home from India" is a game that never failed to bring down the house in my young days, and it must have been enjoyable, for after all these years I feel as if I would like to play it now, if I had a right merry lot of the readers of the AMERICAN AGRICULTURIST about me.

Seat the children on three sides of the room, and let the leader sit so that he can be seen by all. He must then say, "My father's got home from India." "What did he bring you?" one must be instructed to ask. You reply "A fan," and then begin to fan yourself with your hand, which all must imitate. Then you repeat the remark about the return of your father, and another asks, "What did he bring you?" "Two fans," fanning with both hands, which all must imitate. To the next question the answer is, "Two fans, a boot, and a shoe," which necessitates that both hands go through the motion of fanning, while the feet tap the floor. To the next you reply, "Two fans, a boot, a shoe, and a hat," and then the head must be nodded. The first one who misses any motion must pay a forfeit, and it is needless to say that the forfeits are many. It is really good exercise, and after the little ones have been thoroughly instructed in games of this kind, they will relieve you of their care through many a busy hour by playing them among themselves.

An impressive ceremony that can scarcely be called a game, is to ask each one what he has had to be thankful for through the past year, beginning with the youngest. I do not need to dilate on this. It will harm none of us to recount our mercies. That yours may have been, and may ever be many, is my sincere wish.

The Busy Ants.

Many of our boys and girls have, no doubt, often wondered why the ants are such rapid and continuous travelers, always on the go, and always going, seemingly for a purpose. So they do. Let us watch them. Here they are, on the rose basket. What for? Their breakfast, perhaps. Just watch them; see how they tickle the aphides, or green fly, with the antennæ, in order to make them yield a saccharine liquid of which ants are very fond.

This is a systematic work with them; they farm out insects of various kinds to feed upon, and as systematically as a farmer does his stock. In the greenhouse they take the young scale insects—a most troublesome greenhouse pest—and plant them out regularly on the leaves, always choosing such leaves as are the most difficult to clean; and when the insects are of full size, the ants extract a juice from them with as much regularity as a farmer milks his cows. It is very interesting to watch them at their work, as one can easily do in the garden, where nearly every plant has some insect enemy, which, in its turn, has an enemy that destroys.

The ant is proverbial for its industry; its ingenuity is quite as remarkable, and its habits most singular. Did you ever examine an ant-hill—a subterranean city, closely populated? In this little city three classes of ants dwell—the females, the males, and the common people, which have no sex. These do all the work of the community; the males and females perform no labor.

The homes of the ant are constructed with much art; little galleries terminate, at intervals, in more extensive ones, supported by pillars. All this is done with earth and a slime which they secrete, by means of which the working ants make a mortar.

When the female ants are ready to deposit their eggs, they wander about through their palace and let fall at hazard their little eggs; the workers pick them up and gather them together in heaps in the places which separate the galleries. The larvæ are soon hatched, and are not long before they spin themselves little cocoons; when the moment comes for their issuing from their confinement, the workers tear the cocoons, and thus facilitate the operation; then they carefully extend and smooth the wings of the males and the females. From these eggs are born, in fact, not only ants of both sexes, but the workers also, which have no wings. During several days food is brought to the newly-born, and then they are allowed to go out to commence life's work for themselves.

Thanksgiving Day and Its Origin.

We wonder how many boys and girls who read the AMERICAN AGRICULTURIST know the facts which we shall tell them about this holiday. How many, for instance, can tell in what year the day was first observed? To recall the circumstances of the first day of Thanksgiving may serve to remind us of how much more we have to be thankful for, than had those early pilgrims. History tells us that of the 102 emigrants that landed on the bleak and rocky coast of Cape Cod Bay in the winter of 1620 almost half died before the following winter fairly set in. To-day in our comfortable country and city homes we cannot even imagine the sufferings of the survivors, both from destitution and the inclement weather which they were not prepared either as to clothes or habitations to brave. The most of the brave people were not inured to hardships. Among them were gentle and delicately-nurtured men and women.

They staked and laid out two rows of huts for the nineteen families that composed the colony, but within the first year they had to make seven times more graves for the dead than houses for the living. Notwithstanding all their trials and hardships, these brave founders of a great and glorious race had so much for which to be thankful that they had to appoint "an especial day on which to give especial thanks for all their mercies."

So, they agreed among themselves that since their prudence and forethought had been so wonderfully blessed of God, they would send out four men hunting that they might rejoice together in a special manner after the fruit of their labors had been gathered. According to the historian, barley and Indian corn were their only crops, the "peas were not worth gathering, for, as we feared, they were too late sown." This was under the good Governor Bradford. The four men who went hunting brought in as much game as served the company for a week. The recreations of the day consisted of the exercise of their arms, Massasoit, the Indian chief, and ninety of his men coming among them for three days, during which time they were entertained and feasted by the colonists, the Indians killing and bringing to the feast five deer. This was in 1621, and was the beginning of Thanksgiving Day in America.

The next New England Thanksgiving day was in July, 1623, which had been appointed as a day of fasting and prayer on account of drought. While they were praying rain fell abundantly, and the governor appointed it instead a day of thanksgiving. In June, 1632, Governor Winthrop, of the Massachusetts Bay Colony, invited the Governor of Plymouth colony to unite with him in a day of public thanksgiving because the action of the British privy council had been favorable to the colonies. In Massachusetts Bay Colony, old records show that days of thanksgiving were appointed in 1632, 1634, 1637, 1638 and 1639, and sometimes of more than one day in the same year. In Plymouth we find mention of one in 1651, and again in 1668. In 1680 it seems to have become an annual custom.

During the Revolution, it was annually recommended by Congress; then there was a thanksgiving for peace in 1784, and in 1789 President Washington recommended a day of thanksgiving for the adoption of the constitution. In 1795 there was one for the suppression of insurrection, and in April, 1815, the President appointed a day of thanksgiving for peace. In New England during all this time, however, annual proclamations were issued by the Governors of the various States, officially recommending the religious observance of the day, where indeed it became the principal social and home festival of the year.

During the war of the Rebellion, President Lincoln appointed special thanksgiving in 1862 and 1863, and a national proclamation of *annual* thanksgiving was issued in 1863 and 1864. Since that time the President, as well as Governors and Mayors, have issued such a proclamation annually.

One of the most remarkable thanksgivings on record was the custom in Southampton and Easthampton, Long Island. Montauk Point, consisting

of about 9,000 acres, was owned by numerous proprietors in those two towns. They used it as a common pasturage for their stock. The time of driving the flocks home for the winter was fixed at a meeting by the town council, "and it came," says the historian, "to be a rule from the period beyond which the memory of man runneth not, that the Thursday of the week following the return of the cattle from Montauk should be observed as a day of thanksgiving."

But Thanksgiving is older even than the United States. In many countries there have been from time to time thankful hearts. In Holland the first anniversary of the deliverance of the city of Leyden from the siege, October 3, 1575, was kept as a religious festival of thanksgiving and praise. In the English church service, the 5th of November is so celebrated in commemoration of the discovery of the gunpowder plot.

We think we have told you as much as you can remember about what other people had to be thankful for and when, and if you will master some of these dates you will probably be better informed about the day which to you means perhaps only a great feast, than will some of the older folks, who, we are sure, will be very proud and pleased to hear what you have learned.

The Squirrels' Moving Day.

The summer, with all its leafy glory, was gone; the long, frosty nights and bright, brief days, with a thrill of the icy North in the sunny air, told that winter was close at hand. Mr. Bunny Squirrel and his furry little wife were busy gathering nuts from amid the gorgeously colored leaves, and laying away a winter store in the hollow of an old elm tree. But the squirrels were not alone in the secret of where the nuts were thickest. Herbert and Benny, with their sister Margaret and little Maude, came every day under the old hickory tree, pelting down the nuts with clubs, which sometimes came alarmingly near the squirrels. The hickory stood but a little way from the old elm where their home and winter store were hidden. It was clear that they must move. So one bright, Indian summer day, Bunny and Mrs. Squirrel set out house-hunting. It was a long hunt, for trees with good, eligible holes in the trunk, and front doors high enough to keep out prying boys, are not very common in any woods, and when they found one it was already occupied. At length they found a place to let which appeared to be just what they wanted. It was the summer home of a pair of golden-winged woodpeckers, or "flickers." They had reared their brood there, and when the young birds had become full-fledged and strong of wing, the parents concluded to go South, though a few of the flickers remain in their Northern homes all through the year. But this pair put up a notice over the front door showing that the hole was to let. Bunny took it at once, and the next day they packed up their winter store of nuts and moved. But, alas! their little tormentors were already at the foot of the tree. Seeing a hollow place they shrewdly surmised that it extended up through the tree, and kindled a fire there. Now, it is bad enough to live at the lower end of a smoky chimney, and much worse at the top.

But our movers were not discouraged. They quietly waited until the fire and the children went out, then boldly took possession of their new home. Early the next morning they went to work, gnawing at the inside of the hollow with their sharp teeth, and before night had not only enlarged it greatly, but with the chips thus made they securely plugged up the hollow below their nest, so they could live securely all winter.

TROUBLE ALL AROUND.

Our Little Red Rooster.

NORMA.

One spring not long ago we had a hen that hatched quite a brood of little chicks, some speckled, some brown and some white. When they were a few days old the mother hen became so sick that she could not scratch for her fluffy little brood. In the flock of big chickens was a little red rooster, which had always been a selfish fellow. He would drive all the others away from their food and eat it himself, and we called him mean and greedy. He was getting pretty old, too. But the meanest creatures have some redeeming qualities, if one can only find them out. So with this little red rooster; when he found by some sort of instinct that the mother hen was unable to care for her little chicks he took the entire charge of them; stood by them in danger and never let them go hungry. At night he marched them to roost and staid with them. They grew and thrived under his watchful care until they could care for themselves. Now among these wards of his there proved to be several pullets. When they were old enough to look around for nests, in which to lay their nice white eggs, the faithful little red rooster followed them. As they sat on the nest he would settle himself near and remain until Miss Pullet announced with a furious cackle that a new egg was in the nest. He lived to be quite old, and by his kindness to the little family he had voluntarily taken charge of, he won the kindly interest of our entire household. He was sick several times and we nursed him back to health. But at last he died. This is every bit a true story.

A Few New Puzzles.

LETTER PUZZLE.

My first is in hover,
My next is in cover;
My third 's in a name,
My next 's in the same;
My fifth is in reek,
And my whole you may seek
In the name of a Greek.

WORD SQUARE.

My first a blessed Christian grace,
My second may describe a face:
My third a milkmaid bears aloft;
My fourth a girl's name, sweet and soft.

WORD PUZZLE.

I am round, square, a hard case because almost always tight. Take away my first letter and you do not change me. Take away my first and second and transpose my remaining letters, and you leave me but a particle.

DESCRIPTIVE INITIALS.

1. Ever pleasant reading.
2. Faithful nurse.
3. Essentially a poet.
4. Inimitable lassie.
5. Undeniably sagacious general.
6. Admirable poetess.

LETTUSY

Living Lanterns.

South American fire-flies have been called living diamonds. In the same part of the world is also found a pale grey or particularly disagreeable looking moth which may be called a living lantern. Kept inclosed in a box for twenty-four hours, it will be found when the box is opened that the body of the moth is giving forth sufficient light to enable one to read plainly any ordinary type. A number of glass-fronted boxes containing these moths — *Fulgaria canternaria*, naturalists call them — when placed around a room afford nearly as much light as so many wax candles.

Manners at Table.

The time for acquiring good table manners is during childhood, and at home. Years at boarding-school, hours spent over books of social etiquette, may efface vulgar habits, but can never give the ease and grace acquired in childhood at a well-ordered table. A child who is almost a baby can be taught to handle his knife and fork, or spoon if he is too young for those more advanced implements, with a daintiness that will offend no one. Where there are children it is not a good plan to have a wide difference between your every-day and company china, silver and napery. There is too apt to be a wide difference also between every-day and company manners. Let each child have his cover as nicely laid with plate, knife and fork, spoon, napkin and glass as his elders, and remember that he will be sure to note your own use of these articles. Teach him to say "Thank you," and "please," and if he is allowed to leave the table before the meal is ended let him learn to say "Excuse me." We were very much amused at a baby of four summers who recently dined at our table. The meal, interspersed with interesting conversation, was tedious to his infant appetite and intellect, and finally the little man spoke up with, "May I be excused, please? I have enjoyed my dinner very much." Some one at the table—not his father—remarked that that boy bade fair to be "the finest gentleman in America."

To Take Out a Rusty Screw.

The hinge of the wood-house door was broken, and Farmer John, who never liked to see things going to pieces, went to work to replace the broken hinge with a new one. The old screws, however, had rusted, and although a man of muscle, not one of them could Farmer John budge, until Willie came out to see what was going on. Now, Willie is a great reader. His father often thinks he spends too much time over his books. "Let us try the Russian way," said Willie; and going to the house he heated the kitchen poker red-hot, and pressed it to the head of the screw for a few minutes, when the screw was easily taken out with a screw-driver. So much for "book-learning." So much more for the bright boy.

FROM NEAR AND FAR.

Agricultural Crops of India.

Seeding in India is done either in autumn for forage crops, or in winter for grain, cotton and many other staples. The autumn crops sown in the rains are sugar-cane, cotton, hemp (*Cannabis sativa*), rice, a number of kinds; the following grasses: Bajra (*Penice Maria spicata*), Jowar or doura (*Sorghum vulgare*), Kodon (*Paspalum frumentaceum*), mandua (*Eleusine coracana*), shamakh (*Oplismenus coracana*), kangni (*Panicum Italicum*), Chena (*Panicum miliaceum*), indigo, tobacco, til (*Sesamum orientale*), singhsia, a water nut (*Trapa bispimosa*), Indian corn, and the following species of pulse: Oord (*Phaseolus radiatus*), mothi (*P. aconitifolius*), moong (*P. mango*), urhas (*Cajanas Indicus*), lobya (*Dolichos Sinensis*), also a variety of garden crops, and andowa, a castor-oil plant (*Ricinus communis*), are also planted.

The winter crops are wheat, barley, oats, gram (*Cicer arietinum*), garden crops, tobacco, melons, mussoor (*Ervum lens*), linseed, lahi (*Sinapis glauca*), ajwain (*Ligusticum ajowan*), sirson (*Sinapis dichotoma*) and mustard (*Sinapis ramosa*). Sugar-cane is one of the most important crops. There are several varieties of it. The white and black pounda is grown in gardens and is used only for eating in the stalk, being sold in the wagons and at meals for about half a cent for a large stalk. The other kinds are raised for sugar and the stalks are thin and hard. The cotton is the short staple, India variety (*Gossypium Indicum*), and produces about eighty pounds of cleaned cotton per acre. American seed has been sown, but it does not thrive well. The Indian corn is a small eared flint kind, very inferior, and only averages about twenty bushels to the acre. From the til or sesame seed an excellent oil is made, used for food and burning in lamps, and the oil from the seeds of sirson and the large mustard is used for the same purpose. The large mustard might be a good crop for the United States.

There are several varieties of wheat, classed as red and white, bearded and beardless, having from thirty to thirty-eight grains to the ear. Most of the wheat is of the soft or starchy kind. The bran is very delicate and is never bolted by the natives. The average yield is seventeen bushels per acre. Gram or chick pea is the next important crop after wheat, and is the chief food for horses. The grain is the size of a pea, but shaped like a sheep's head, hence its botanical name, and of a yellow-brown color. It is also largely eaten by the natives in various ways, chiefly after being parched in hot lard, when it is quite palatable. In this form it is carried by the laborers with them to the fields for a midday lunch. When parched, it is also used in confectionery, sometimes flavored with cayenne pepper.

I. L. HAUSER, Bareilly, India.

The Green-Mountain State.

Something of a sensation has been created by the report that the farming population of Vermont is gradually diminishing, and that thousands of abandoned farms are the result. Whatever may be the revelations of the next census, it cannot be denied that there has been a tremendous drain on the young manhood of Vermont to develop the resources and build up the industries of the newer parts of the country. In a great many farming districts the population has fallen off in numbers. This is peculiarly applicable to some of the higher regions, while the valleys, and particularly the vicinities of villages, have more than held their own. And yet there was never a time since the days of Ethan Allen when the old Green-Mountain State held out greater opportunities for energetic and judicious farming than the present. The same energy and industry which are necessary in the newer parts of the country will, if directed by skill and judgment, bring as great rewards to the Vermont farmer with far less of vicissitudes and hardships. But success cannot be achieved in Vermont, any more than elsewhere, by following old and obsolete methods of farming. The spectacle which might have been witnessed this year of farmers harvesting grain with cradles, in broad, level river bottoms, well adapted to the use of improved implements, and of whole dairy herds, of which not one-third of the cows yield a profitable amount of milk, affords reason enough why some Vermont farmers "don't make farming pay." Our climate is bracing and healthful; no blizzards, hurricanes or prairie fires come near us; the soil lies on limestone foundation, is well drained, yields the sweetest and most nutritious grasses, and with good cultivation abundant crops of cereals. The horses and sheep bred and raised here are famous for their superior excellence, and Vermont butter has long been a fancy article in the market. All that is wanted to check the loss of population is an awakening on the part of our farmers, which will place them in line with the progress of the age.

R. F. JENNINGS, Rutland Co., Vt.

Picking Currants in Western New York.

For several years past we have paid one cent per pound. We could probably get it done for seventy-five cents a hundred pounds. But we live in the country, five miles from a populous town, and we have to pay a good price, as at this season there is a sharp demand for this kind of labor—in picking peas for market and for the canning establishments as well as for picking red and black raspberries. A quick boy that will work can pick one hundred pounds per day. This year one woman picked one hundred and thirty-five pounds in a day of less than ten hours, and her young daughter picked seventy-five pounds. We get more or less pickers from the city, but much prefer those living in the neighborhood, especially a mother with three or four children. We have several such families who earn $4 or $5 per day. We weigh up the currants and pay every evening, and it is pleasant to see the children smile as they get their money.

Visitors who see our currants growing almost invariably exclaim, "What a fine crop!—but how do you get them picked?" The fact is, there are a great many people in the world,—not only in the cities but in the country. Where we live the farming population is largely German, English, and Irish, and large families of children are common; and they are glad to earn a little extra money (and not so little either) by picking currants, berries, etc. The trouble is, if you are dependent on them alone they are inclined to strike for higher pay. Last year we had some little trouble of this kind and got pickers from the city. This year we went into the same streets in the city and found some of the boys and girls that had picked the previous season. We said to them: "Our wagon will be at the toll-gate at seven o'clock to-morrow morning, sharp, and will take you out and bring you back in the evening. We will pay you one cent per pound. Bring your dinners with you, and get as many to come as you can." The first morning half a dozen women and twenty or thirty children came. The women earned seventy-five cents to one dollar per day, and the children from thirty to fifty cents per day. They took the money home with them at night, and we told them the team would be at the same place the next morning. Before we got through picking we had as many as ninety-three pickers in a day. So far as our experience goes, therefore, there is no trouble to get all the help you want for picking currants, berries, peas, green beans, pickles, etc. It requires, however, three or four people to keep them from running all over the ground, and to see that they pick properly and do not steal each other's currants. We had one very mild-mannered man, distinguished for his gentleness and kindness, who had charge of a lot of the city Arabs. He spoke sweetly to them, and they said "Yes, sir, certainly, sir," but did just what he told them not to do, and before noon he had knocked down six of the biggest boys. After that he had no further trouble with all who saw the performance.

JOSEPH HARRIS, Monroe Co., N. Y.

Dairying in Normandy, France.

The freshness of the pastures in Calvados in July surpasses that of the valleys of the Mohawk, the Delaware, or the Susquehanna. The town of Isigny is a central market for butter. The cows that yield the milk from which the highest-priced butter of the world is made, are nearly pure-bred Cotentin. These cows of Normandy are large, grand-looking animals, the best giving, when fresh, twenty quarts of milk daily, and through a long term of annual lactation. It requires about twelve quarts of milk to a pound of butter on grass alone. There is a substantial, business-like look to a herd of these cows. Not too fine, nor yet too coarse. I do not know that there has ever been a single importation of the Cotentin or Norman breed of cattle into the United States.

France exports nearly 1,000,000 pounds of butter annually. Isigny butter at wholesale sells at auction in Paris for seventy-five cents per pound in winter. Nearly one-half of the butter imported into England comes from France. One house in London makes in commissions on butter imported from France about $50,000 annually, and that business is managed by a woman. As a cheese-producing cow, the Cotentin fairly compares with the excellence in butter. The Comembert cheese, made from her milk in the Paris Exposition of 1874, took the champion gold medal against three such competitors as the renowned Brie, Gruyere and Coulommiers. The report of the judges contains the following statement: "It surpasses in delicacy everything that the ingenuity of the cheese manufacturer has been able to invent to flatter the most fastidious palate." But subsequently, fickle fashion's fastidious taste selected the delicious and piquant Roquefort in 1875; and it again changed in 1876 to the Gruyere. With a rivalry of seventy varieties of cheese, every gustatory fancy might be fully satisfied.

Patient and exact manipulation, cleanliness to severity in every step of butter-making and cheese-manufacture, are the elements that enter into the products, next in importance to the cream and milk. It is because of these national traits that the handicraft of the French secure such excellent products from whatever materials wrought. Painstaking is too seldom a factor in our manufactures. Rapid manufacture and sleight-of-hand mar too many of our domestic goods.

In Isigny, the hand never touches the butter, which is pressed in clean, sweet cotton cloths until the butter-milk is removed. The same care is shown in every step of handling dairy products. When a drop of milk, cream or any substance falls to the floor, it is either carefully wiped up or removed by flowing water. Like our tea-tasters, butter experts have so keenly cultivated the sense of taste that they can accurately replace samples of butter previously examined without seeing whence they were taken, though a dozen samples have been arranged to verify the previous judgment.

H. S. ERICUS, Isigny, France.

Opportunities in Honduras.

The quantity and variety of the valuable products of Honduras are something marvellous. In the first place there are its precious woods, including rose-wood, iron-wood, sandal-wood, satin-wood, silk-cotton or ceiba, mahogany, cedar, pine, guanacaste, cortez, black and white laurel, ebony, walnut, locust and many others, some of which have not yet been introduced into the United States. Of dye-woods there are annatto, Brazil, fustic, indigo, sacate-tinta, etc. It only needs transportation facilities into the interior of this country to make these natural products sources of rich profits. Then there are its fruits, such as bananas, plantains, aquacates, zaphotes, cocoanuts, pine-apples, oranges, lemons, limes, blackberries and many others of the finest quality. The banana and plantain exports amount now to an annual value of about one million dollars. Of medicinal and fibrous plants are the quinia, ipecac, sarsaparilla, rhubarb, vanilla and a great number of herbs, barks, gums and roots unknown to *materia medica*. There are mines of gold and silver, platinum, copper, tin, lead, iron and opals. It is estimated that the gold and silver product alone will amount next year to two million dollars. A peaceful revolution, for the first time in many years, is now sweeping over Honduras. The laws of the government are most liberal, and the people exceedingly kind to foreigners, and immigration into this country is rapidly increasing.

H. C. ELDERMAN. Tegucigalpa, Honduras.

California Ahead.

In the September number of the AMERICAN AGRICULTURIST is an article entitled "Two Crops of Potatoes in One Year," in which Mr. L. Bowman relates his experience, and requests all to let him know if any one can beat it. In this vicinity it is quite a common practice, as is shown by what I did in the summer of 1888. Some time during February I received from a seedsman of Philadelphia one pound of potatoes of the Empire State variety, which I cut to single eyes, and planted in the open ground. On the 13th of June I dug the crop, which consisted of 193 pounds of fine potatoes, some of which were exhibited at the State Fair. In the month of July a friend, having heard of this variety of potatoes, requested me to let him have some of them to plant on some bottom land, which I did, he to give me half the product. Early in

November they were dug, my share being six grain sacks full, which, I think, was a very good return on my investment.

While on the subject, I will tell you what I did by way of experiment one summer in the seventies. In the month of February I planted a small piece of ground—about two square rods—to Early Rose, the crop of which I dug in May. I immediately planted the same ground with other seed, the crop of which matured in August, when I planted the same ground with seed from the first crop, the product of which was dug in November. So I raised three crops of potatoes in one year on the same piece of land. This was accomplished by the aid of irrigation.

ROBERT COPE, San Joaquin Co., Cal.

The Far Northwest.

After nearly two years' investigation of the physical merits and natural resources of Montana, I have come to the conclusion that there is almost limitless field for missionary work in the telling to Eastern folks something about this realm of undeveloped wealth and golden opportunities. Even the intelligence of the Eastern and Middle States is not familiar with the fact that away off here, twenty-five hundred miles in a northwesterly direction from New York, is to be enjoyed a milder and more equable climate than that of any of the New England States; or that if the northwesterly journey be continued eight hundred miles farther, to the peerless Puget Sound, freezing weather is unknown and never-dying verdure clads the slopes to the sea. It is quite surprising, indeed, that the general climatic conditions of Montana, Northern Idaho and Washington are so little understood by the average reader, as tourists have commonly appreciated and advertised the prevailing springtime of the Sound region and the exhilarating mildness of Montana. Perhaps the best way to convey an idea of what Montana winters are like will be to state the fact that horses range the hills from the time they are foaled until they reach maturity without ever being fed either hay or grain; that cattle are seldom fed more than two or three weeks during the winter season, and that sheep are rarely fed for a longer time than two months. However, climate is the very least of Montana's attractions or advantages. At Helena, the capital, is to be found an indication of something far beyond ordinary conditions in the fact that, notwithstanding its isolation by more than one thousand miles from any large commercial center like St. Paul or San Francisco, it is the richest city of its size upon the continent. Where is the proof? In this: that its population does not exceed twenty thousand, while its banks show at this time more than eight million dollars in deposits and surplus. Where does this money come from? The question is answered by the surrounding mountains that are seamed with ores; by the beautiful valleys teeming with herds and droves; by the almost limitless area of gravels that are rich in gold. Indeed, to its gold-bearing gravels does Montana owe its first step toward its present position as the foremost mineral-producing region of the continent. Early in the '60s prospectors from Colorado and the region south of Montana "struck it rich" in nearly every gulch visited, and before 1865 the new territory was turning out its millions of dollars yearly in virgin gold. Of late years the gold product of California placers has resulted from the working of gravels that pay from eight to twenty cents per cubic yard; and where water was not too expensive, this class of placers have been veritable bonanzas. Here in Montana exist thousands of acres of gold-bearing gravels that will yield from fifty cents to two dollars per cubic yard, awaiting the influx of Eastern capital to make them yield enormous returns upon the capital invested. Some heavy concerns are opening up large properties (notably the Montana Hydraulic Co. at Washington Bar and the Penn Placer Co. in Jefferson county) with improved California methods, experts and mining engineers who visited Montana during the past year. Countless millions will yet be produced by Montana placers.

Montana produced in 1888 over forty million dollars worth of gold, silver, copper and lead from its vein mines or lodes. Of this amount more than one-half came from one locality, Butte—now the largest mining camp in the world. Indeed, this one city produced more mineral value than any one entire State or Territory in the whole country outside of Montana. And this is the result of but limited development of a district that produced nothing less than a decade ago. I visited Butte a few days ago, and from personal inspection I am convinced that, in mining parlance, "the surface hasn't been scratched yet." A few of the great mines (all were deemed worthless a few years ago) are at the height of their production, but hundreds that are just as good have only begun to be worked. While this is true of Butte, my personal observations, extending over a year's almost constant traveling in the Territory, convince me that there are at least a score of districts now developing that will within a very few years rank well alongside of the great operations now carried on in Montana's chief mining center. As an indication of how rapidly the State is now being prospected, I may state that during the past year more than two thousand new mines were located in a single county (Jefferson). EATON B. NORTHROP,

Lewis and Clark Co., Montana.

Nevada's Soil and Climate.

Eastern people are rushing to California and giving up their bottom dollar for climate. In no part of California, from Siskiyou to San Diego, from the Sierras to the sea, can a climate be found that will compare with Nevada generally. One yard of ours is worth a mile square of theirs, if that is the way they measure and dispose of it to the Eastern tenderfoot. The climate of Southern California is unbearably hot at certain seasons of the year, and it is a kind of heat that is almost as enervating and prostrating as that of the Mississippi valley, while in Nevada it is always deliciously cool and invigorating. The Nevada climate is a regular champagne tonic to the weak and strong alike. But we can't entirely subsist on climate. It is a splendid thing as far as it goes, but we need something else with it. Those of us who have cast our lot here, and intend remaining to the end, have important work ahead of us.

One of the chief drawbacks to the State since its earliest settlement has resulted from the migratory disposition of our people. We have lacked in permanent homes. We must become more and more an agricultural people. We have the soil and climate; what we need now is irrigation. If we had irrigating water, tens of thousands of people would become benefactors by making two blades of grass grow where now grows but one. Instead of having a population of 60,000, we might have the population of California, or a million people. Water stored for summer use near the source of the Carson, Walker and Humboldt streams would irrigate lands for hundreds of thousands of people. Irrigation is the most difficult question Nevada has to solve; that solved, and a great future awaits the State. At this elevation of 5,000 feet above sea level, that irrigation of large areas is possible, seems to be the opinion of civil engineers and others well informed in such matters. Not only should there be a winter storage of water for summer, but there should thoroughly be made the test of securing water through artesian well borings. The artesian wells of Ormsby, Churchill, Humboldt and Lander counties are evidence conclusive that wells in this mountainous country are possible. Every drop of water must be utilized. The rush of waters that go out through the mountain canyons at spring time when the deep snows of winter are disappearing, must be stored in artificial lakes and reservoirs ready for use during the first months of summer. Millions of acres may be brought under cultivation in this manner. The valley of Humboldt alone, with a proper distribution and husbanding of the water resources, is capable of maintaining a larger population than the State now possesses. Take all our large valleys, reclaimed and unreclaimed, and there is scarcely a State that has more good agricultural land. Of course the process of settlement will be slow. Men not familiar with the system of irrigation and the benefits which accrue from it, one year with another, will naturally drift elsewhere as long as government or low-priced lands are to be had where irrigation is not required. A stranger unacquainted with the history of sagebrush land would regard any attempt to reclaim it from barrenness to a state of fertility as the hight of insanity. The general character of the soil is rich and mellow, and has all the principles required for successful agriculture. With irrigation the desert in truth blossoms as the rose. The best farms were once sterile sage lands. The soil is porous, and for the first two or three seasons requires generous irrigation, but it speedily becomes less absorptive, and less and less water is required. With irrigation these large brush-lands are in a few years turned into the finest farms, with less trouble than attends a similar transformation on the wild prairies of Iowa and Nebraska. Irrigation is generally regarded by newcomers as a hardship, but those who use it have learned to appreciate the great advantages of a judicious application of water, because it not only insures a crop but infuses new life and vigor into the soil. The domestic grasses, such as alfalfa, red clover and red-top, thrive abundantly on these irrigated lands, and three and four croppings are not an exception. Cultivation like that which France has given her soil, and ten thousand additional families could erect splendid homes within her ample borders.

JACOB KOENIG, Ormsby Co., Nevada.

Abundant Crops in Iowa.

The season of 1889 will be long remembered in Central Iowa as one of plenty. The hay crop, which looked light early in the year, thickened up in June and July and made a good crop after all. Clover, especially, was very heavy on new seeding, and the great ricks were soon surrounded by the best second crop known for years. This was full of seed and yields quite a profit when hulled out. I say "ricks," for the barns and large hay-sheds are as full as can be, so of course the great surplus must go outdoors. The oat crop was very good also, forty bushels to the acre being light this year, and many fields grow from 50 to 60 bushels per acre of very nice grain. One farmer threshed out 2,650 bushels in one day, so full of oats is the straw this season. The cost of threshing out of the shock with a steam-thresher is considerable. Eight teams at $2.50 per day, $20; eight men at $1.25 is $10 more; 2,000 bushels at two cents per bushel for threshing adds $40 more. A ton of coal is another $2. Then comes the two meals for at least twenty-five persons. So the cost runs to very nearly $80 for one day's work, which will take 500 bushels of oats to pay the bill. The apple crop is one about which we were nearly discouraged, so many trees have died in the last few years. But this year the remaining trees fairly bend to the ground under their load of fruit. Twenty cents per bushel is the ruling price, while many cannot be sold at all. Winter apples are in equal abundance on russet trees and a few other sorts. Grapes are only an average crop. Moore's Early went first to market at a fair price when Concords were just getting ripe. The corn crop will exceed last year's yield by one-fifth. It is thought some farmers estimate their crop very large, even up to 100 bushels per acre. Your correspondent never saw such a plenty of great ears and big stalks as appear this fall. In some other localities the dry August hastened maturity so the crop is not fully developed, but in Marshall county we have certainly no reason to complain. Only the cattle-feeders feel "blue." Their year's work will yield no profit; indeed, many books will show a heavy loss when balanced up. Six cents per pound was paid last fall for shoats; now fat hogs are worth only $3.50 to $4 per hundred pounds, and the steers are but little higher than when purchased. To a man having $10,000 invested in such stock the situation is not pleasant.

A. H. SHELDON, Marshall Co., Iowa.

Texas as a Fruit Country.

Texas stands to-day where the other States have stood in regard to fruit. Her exhibits of fruit now at her horticultural fairs are grand, and include peaches, apples, grapes, pears, etc. The Chinese cling peach grows here to perfection; and Texas is the State for fine grapes. As in California, they grow to perfection even in the woods. Some of the wild grapes are luscious and grow to a large size. The Delaware, Concord, Agawam, Herbemont and Triumph grow extra fine. Of peaches, the White Flesh Cling grows to a large size, as also the yellow peach. Of apples the Summer Pearmain, Maiden's Blush, Holly, Rambo, Ben Davis and other varieties grow in Texas without equal. Of pears, the Duchess, Howell and Leconte succeed perfectly. Plums, strawberries and blackberries are unsurpassed, even by the superb fruit in the great State of California. Texas is not behind that State in regard to fruit, as she is shipping it north, south, east and west, and is worthy to be called a great fruit country, the Eureka of the South. W. S. MOORE, Denton Co., Texas.

OUR BASKET

Guano.—D. T., Chester, Pa.: The farmers of Great Britain have not always obtained their guano from South America, for we find in *The Gardener's Chronicle* for January 3d, 1846, the following statement: "One hundred and thirty-seven thousand and three hundred tons of guano were consumed in this country between the first of July, 1844, and the first of July, 1845. Of this quantity Africa supplied us with about 100,000 tons and South America with the remainder!" This shows that only forty-five years ago African guano was used largely in excess of South American, or as we now call it, Peruvian guano. The Peruvian guano, however, was so superior to the African that it soon drove the latter out of the market, or nearly so.

Double White Feverfew.—L. T. S., Paris, Idaho: The flower and leaves you send are those of the common garden feverfew (*Pyrethrum Parthenium*). Camomile is quite a different plant—although it belongs to the same order—for it spreads over the ground, not growing up with a leafy stem like the feverfew. The leaves are also very finely divided with a strong but pleasant scent. Its botanical name is *Anthemis nobilis*.

Judas Tree.—Inquirer, Morrisville, Pa.: The Japan Judas tree (*Cercis Japonica*), does not assume a tree form like our native species (*C. Canadensis*), but may be described as a many-stemmed shrub six to eight feet high, the flowers of a rich purplish red color appearing in the spring before the leaves, and in such profusion as to entirely surround the twigs and smaller branches. The individual flowers are also larger than those of the native species and of a brighter color. The Japan species is hardy in the latitude of New York city, but is said to be rather tender farther north. It is a rather scarce shrub, although introduced more than forty years ago.

Planting Butternut Trees.—Farmer, Mona, Kan.: The butternut is a vigorous and moderately rapid growing tree, while the hickory is of very slow growth until it has become well established, or from four to six years old. By planting the nuts in a light rich soil you will obtain seedlings with a great abundance of small fibrous roots which are easily taken up with the plants, and then when reset will almost insure their continued growth in a favorable season. But when any kind of nut trees are started in a close, compact soil, the seedlings rarely throw out any considerable number of side or lateral roots, but have one or more central or tap root which is usually broken or cut off in digging, leaving only a fleshy stump devoid of fibres, and the result is that most of such seedlings die if transplanted. If you wish to save butternut trees in nursery rows for transplanting when four to six feet high, choose a light soil—and a sandy one is preferable to any other—sow the nuts this fall in drills and cover about two inches deep. Give the seedling clean cultivation next summer, then transplant early the following spring into nursery rows, four feet apart, and the trees about eighteen inches apart in the row. When three or four years old, transplant to a portion where they are to remain permanently.

A Model Orchard.—H. W. Cortright, Carbon Co., Pa., writes us: My private orchard consists of eighty apple, ninety peach, thirty pear, twenty plum, two apricot, sixteen nut, five mulberry, four cherry, four quince, in all, 251 trees, which run from three to ten years of age, many of them having fruited for the last two or three seasons. I have been able to counteract any attacks of the destroying insect from knowledge obtained chiefly through the AMERICAN AGRICULTURIST, of which I have several bound volumes. My trees are all highly cultivated with horse manure, wood ashes and bone dust, and blight doesn't come from want of care in my orchard. All of my trees are recorded, and changes of condition noted from time to time in a book kept for the purpose. For every tree planted by me, the holes are dug at least six months previous to the setting of the tree, two feet deep, three feet wide, four quarts of bone dust in the bottom of the hole, layer of soil, then layer of horse manure, then soil to surface.

Northern Lady-Bird.—Rev. R. Wainwright, Bowman's Bluff, N. C.: The small yellow larvæ with branching thorn-like spines tipped with black, which were found on a rose-bush, are those of the Northern Lady-bird (*Epilachna borealis*). The two specimens had completed their transformation when they reached us, but as we found the cast-off pupæ skins we concluded that they were in the larval stage when packed. This species of lady-bird is of a bright yellow spotted with black, and there is one other native species of the genus, the *E. corrupta*, and we regret that truth compels us to add that these two species are really very "black sheep" in an otherwise large flock of white ones, for of more than one hundred species of the little beetles commonly known as lady-birds inhabiting the United States, the two we have named are the only vegetarians; all of the others feed on plant-lice and other small noxious insects; consequently, must be considered as our friends. This Northern Lady-bird, as it is called, is often a great pest in the garden, as it is fond of watermelons, gourds and pumpkins, sucking the juices from under the skin and checking growth. We have counted over two hundred of these beetles at work on one large watermelon, which was soon peeled and deserted for a fresh specimen. It is not usual, however, for these insects to appear in sufficiently large numbers to cause any considerable injury to melons and pumpkins.

Collecting-Bottles for Insects.—For killing quickly, and without wetting, or affecting the color, nothing is better than cyanide of potassium. It is true that the cyanide is very poisonous; but it is not at all dangerous to use, if a person is quite careful in preparing the collecting-bottles. These should have a wide mouth, and if of the same diameter the entire length, so much the better. Empty quinine bottles serve very well. To prepare the bottles for collecting, break up the cyanide into pieces a quarter of an inch in diameter, and drop them in the bottom of the bottle; then mix a little plaster-of-Paris in a separate dish, and, when of the consistency of thick paste, pour enough into the bottle to cover the lumps of cyanide. It will harden in a few minutes, when the bottle may be corked up ready for use. When moths, butterflies, etc., are dropped into such bottles, the fumes of the cyanide will quickly kill them, after which they may be taken out and mounted.

Pure Vinegar.—The law to prevent deception in sales of vinegar enacted last winter by the New York Legislature is very stringent in its provisions. It prohibits the manufacture, sale, or keeping for sale "(1) any vinegar which shall not have an acidity equivalent to the presence of at least four and one-half per centum by weight, of absolute acetic acid, or (2) any cider vinegar which shall have less than such amount of acidity, or less than two per centum by weight, of cider vinegar solids upon full evaporation over boiling water." It also forbids the sale of anything not made exclusively of pure apple juice, as cider vinegar; the use of any preparation of lead, copper, sulphuric acid or other ingredients injurious to health; that every manufacturer and producer shall plainly brand the package containing the vinegar; and makes every violation of the statute a misdemeanor, punishable by fine of fifty to two hundred and fifty dollars. The Dairy Commissioner of the State is charged with the enforcement of the law.

Wood Stains.—C. A. Torrey, Jr., Sanbornton, N. H., asks us to tell him how to make "wood stains," but does not name the color he desires. To describe the mode of preparation and application of all the wood stains in use would fill many pages of the AMERICAN AGRICULTURIST, but we will name only a few of the most common, and, perhaps, simple and useful. Dissolved asphaltum in spirits of turpentine makes a good brown stain for coarse woodwork. Half a pound of oak-bark and the same quantity of walnut-shells, boiled in half a gallon of water, is an excellent improver of cheap rosewood as well as for staining butternut and black-walnut. For staining wood in imitation of mahogany use water, one gallon; madder, eight ounces; fustic, four ounces. Boil and apply, while hot, with a brush. A decoction of logwood chips may be used for the same purpose and then given a coat of shellac varnish. Or, boil half a pound of logwood in three pints of water until the color is extracted, then add one ounce of salt of tartar. Apply when hot. For imitation ebony take red cherry or any similar hard and fine-grained wood and wash three or four times—allowing it to dry between each application—with a strong decoction of logwood. Then wash with a solution of acetate of iron, which is made by dissolving fine iron-filings in strong vinegar. The surface of the wood must be rubbed down and polished before varnish is applied.

Entomological Pins.—George Dunn, Nottoway Co., Va.: Entomological pins are all imported from Europe, although ordinary pins are made in this country in immense quantities, and perhaps at less cost than anywhere else in the world. But, for some reason, unknown to us, American pin-makers have either not attempted it, or have failed to make a good entomological pin; consequently, we are compelled to send to Europe for this article. The pin most in favor among our entomologists is manufactured in Germany, and known as the Klaeger, or Carlsbader pin, and is sold here by dealers in entomological supplies, at retail, in papers containing 500 pins, at one dollar per 1000; if sent by mail, prepaid. These pins are of different sizes, from No. 00 up to Nos. 5 and 6. The smaller numbers, or from Nos. 1 to 3, are the most convenient sizes for the common beetles and butterflies, and Nos. 4 and 5 for the large night-flying moths, and some of our largest native beetles.

Moisture in Incubators.—Dyer Bros., Middlesex Co., Mass.: The subject of moisture in incubators is one that has been freely discussed since artificial incubation has been practiced, and no conclusion has yet been decided upon in regard to the requirements of the embryo chick during incubation. It is usual to give but little moisture the first week, increasing the quantity the second, and allowing plenty the third. If too much moisture is given at the beginning, the development of the chick will be too rapid at first, and, before the period expires, it will be "too large to live in the shell, and not matured sufficiently to get out." The amount of moisture is usually measured by what is known as a moisture-gauge, which is simply a glass tube, closed at the bottom, four inches long, and one inch in diameter. It can be procured at any place where chemists' supplies are sold, for about five cents, being known as a "test-tube." The tube is filled with water, being first fastened to a block of wood, two inches cube, by boring a hole in the block, and placing the block and tube in the egg-drawer. If an inch of water evaporates from the tube daily, it indicates a plentiful supply of moisture. An excellent appliance in the egg-drawer is a sponge, saturated with water. As long as there is plenty of moisture, the sponge remains wet. If moisture is needed, the sponge becomes dry.

Breeding Canaries.—Miss E. Hiller, Essex Co., N. Y.: It is an interesting pastime to breed canaries, but there is not much profit in it, unless there be crosses made with the finches. American-bred birds are not, as a rule, as good singers as their German cousins, hence, there is no market for them. Good German singing canaries can be purchased so cheap that the American birds are at a discount. The breeding season starts in February and ends in June. Some people breed in autumn, but this is not advisable.

Pear Tree Borer and Blight.—H. W. Cortright, Carbon Co., Pa.: The minute dark brown beetle with a rough convex thorax, which you found boring into the young shoots of your pear trees, is an insect described as early as 1817, by Professor Peck, in the *Massachusetts Agricultural Journal*, under the name of *Scolytus Pyri*, or pear-tree scolytus. But more modern entomologists have placed it in the genus *Xyleborus*, retaining its specific name of *Pyri*. Dr. Harris, in "Insects Injurious to Vegetation," in speaking of this pest of the pear tree, says, "The minuteness of the in-

sect, the difficulty attending the discovery of the precise seat of its operations before it has left the tree and the small size of the aperture through which it makes its escape from the limb, are probably the reasons why it has eluded the researches of those persons who disbelieve in its existence as the cause of the blasting the limbs of the pear tree." From the above it will be seen that in Dr. Harris's time, and even later, many orchardists believed that this little beetle was the cause of the disease now well known as "twig-blight" in both the apple and pear. That the boring into the twigs of pear trees often causes the leaves to wither, and death of the infested twig, is certainly true, but it is now well known that the twig-blight is a disease, and not the result of injury from any kind of insect. Both twig-borers and twig-blight may be found on the same tree at the same time, and yet working independently of each other. We cannot give you any better advice than to cut off and burn every affected twig as soon as it is discovered, whether it is attacked by borers or blight.

Silo for Alaska.—G. H. Barnes, Alaska Ter.: Such a silo as you suggest, of two-inch plank, twenty feet square and twelve feet deep, sunken in the sand, would possess no advantage over the usual form of wooden silo with double walls of inch-boards and building paper, enclosing dead air spaces. In fact, it would be very difficult to render a silo of a single plank in thickness impervious to air, water and frost, which is indispensable for successful preservation of green forage.

The Late Henry Shaw.—Few men have shown more generous and enlightened public spirit than Henry Shaw, who died at his home in St. Louis, Mo., August 25th, aged 89 years. Born in England, he went to St. Louis in 1819, and engaged in trade. In middle life he had accumulated a handsome fortune, which was largely invested in St. Louis real estate. Retiring from commercial life, Mr. Shaw spent several years in travel, and brought back from all parts of the world he visited specimens or seeds of plants, with which he began the famous botanical garden in St. Louis which bears his name, and which is one of the largest and most comprehensive in the world. It has always been thrown open freely to the public, and now becomes the property of the State of Missouri. Tower Hill Park, in which Mr. Shaw's residence was situated, is now, by his beneficence, the property of the city. During more than forty years of his long life he employed a part of his great wealth for the benefit of his fellow-men, and dying left a name which is a more enduring monument than bronze or granite.

Stem-Rot in Cauliflowers.—R. E. Benson, Baltimore Co., Md., complains of stem-rot in his cauliflowers, and asks for the cause. The excessive wet weather has, no doubt, been the cause of this disastrous disease, which has nearly ruined the crop in the great cauliflower district of Long Island. In fact, most of the farmers have met with a total loss, while none have enough to pay half the cost of production. In dry seasons, stem-rot is unknown on Long Island, while in seasons like this it is common.

Success of the Bordeaux Mixture.—Col. Alexander W. Pearson, in charge of the Experiments of the U. S. Department of Agriculture, informs us that, "The use of the copper solutions has resulted this year as satisfactorily as was expected, considering the abnormally moist summer. Prof. Galloway, of the Department of Agriculture, who visited me yesterday, is satisfied (as I am) with what we have accomplished this year; the partial success of which assures complete success in ordinary seasons."

What to do with Damaged Straw.—A correspondent of the AMERICAN AGRICULTURIST has a large stock of oat-straw that was so damaged by the rain that it is of no value as fodder, and not worth drawing to market. He asks what he should do with it. 1st: Use all you can of it for bedding and for absorbing liquid manure. 2d: Let it stay in the stack until spring, and scatter it all over the surface of your apple-orchard for a mulch. It frequently has a wonderfully beneficial effect on the trees, and on the size and quality of the fruit. It checks evaporation, kills weeds, and keeps the soil moist. 3d: Spread it, as soon as winter sets in, about two inches thick on the surface of winter-wheat, especially on exposed portions of the field. It often prevents winter-killing. 4th: Spread it at the rate of about five tons per acre on heavy clay-land, and plow it under to lighten and ameliorate it. 5th: If you have a wet, old-fashioned barn-yard, you can get rid of large quantities of it by putting it a foot thick over the yard, and letting the cattle trample it down, and then put on more. It does not pay, however, to spread out straw merely to let it get wet by rain. Every ton of this wet straw that you draw out in spring contains 1,500 pounds of water, or more; and 500 pounds of dry straw is worth as much for manure or for mulch, or lightening or manuring the soil, as a ton of wet straw containing 1,500 pounds of pure water.

The Turnip Crop.—The wet season has been disastrous to the turnip crop in the East. Rutabagas are rotting the same as cabbage and cauliflower. Many crops will not be harvested, the roots are blackened with rot, and the leaves are yellow, and dying. This is the first season, within our recollection, that rutabagas have been injured by too much rain.

Weevil in Beans.—Jerome Roberts, Trumbull Co., Ohio, wishes to know "how to keep beans through the winter from the weevil?" Beans that are free from weevils when put away for winter are not injured by weevils during the winter or spring. It is only the beans that have the weevils inside of them that are injured. There is no practical and profitable way of saving the beans that have the weevils in them.

Lower Express Rates.—All the express companies have agreed to carry nursery stock that is boxed or baled or packed in straw at the special rates fixed for produce. This is a reduction of twenty or twenty five per cent. Last year a similar reduction in freight rates was secured. The work was done by the American Nurserymen's Association, through an effective committee directed by S. M. Emery, chairman.

Frozen Silage.—W. E. Bassler, Schoharie Co., N. Y., asks: "Will not the silage in such silos as described by Prof. Miles in his recent work, 'Silos, Ensilage and Silage,' freeze? If so, will it not improve the quality of the silage as a food?" Answer, by Prof. M. Miles: "In reports from a large number of farmers in the Northern States of their experience in feeding silage during the winter months no complaints have come to my notice of inconvenience from the freezing of the silage. With silos of wood, having a tight dead air space on all sides, as described in 'Silos, Ensilage and Silage,' there need be no apprehension of annoyance from frost, under any reasonable system of management."

The Corn Crop is well in hand by this time. The value of the crop when ensilaged is steadily becoming better understood. A favorite method in the West, where silos are not used, is to haul from the field when wanted, cut fine, steam or soak, and feed, saving the labor of picking, husking, shelling, and grinding. The home-feeding of oats in the sheaf, in the same way, is also economical. The sale of grains is universally recognized as unprofitable where they can be made into marketable animals, and thus have the plant food left upon the land. The loss of harvested grain by the depredations of rats, mice, and other rodents, is very grave, and far beyond what it is computed. A little calculation and work, to render stacks and grain-bins vermin-proof, will save large sums of money.

A New Herd-Book.—The American Black Polled Aberdeen-Angus Association has been duly incorporated. President John Kemper says: "We shall keep a correct copy of all pedigrees of this class of cattle in America, and shall publish a herd-book, founded on the record of the Scotland herd-book. All cattle recorded by the Scotland herd-book, and their calves, are admitted for membership in this herd-book." The secretary is Thomas McFarlane, Iowa City, Iowa.

The Vermont Horse Show.—The fifth annual exhibition of the Vermont Horse-Breeders' Association, which was held at Rutland, August 28th to 30th, was notable among the many fairs of the season. The entries were confined entirely to road and trotting horses, and those for premiums to horses descended from Justin Morgan. The display of Morgan horses was admirable, both in numbers and quality, and showed that this famous family has lost none of its deserved popularity in its native State. It was the largest exhibition of useful road horses ever seen in the United States. Ben Franklin and Aristos, which are generally recognized as the greatest living sons of Daniel Lambert, were both on the ground, with numerous progeny, and attracted much attention. The arrangements were admirable in all respects. One feature which deserves special mention was the announcing of the name and breeding of each animal as it was led or driven into the show-ring. The weather was favorable, the attendance immense, and the whole affair was an unqualified success.

Wintering Chinese Yams.—G. M. Boutelle, Middlesex Co., Mass.: The Chinese yam is quite hardy in the North, the tuber standing in the ground through the winter without protection. Still, it is well enough in your locality to give the roots a light mulch of straw, cornstalks or other litter, to protect them from the vicissitudes of alternate freezing and thawing.

An Ice-House.—A Subscriber at Murray Bay, Canada: There is no need for an elaborate or expensive ice-house. Any kind of a structure that will hold sawdust is sufficient, so that ventilation is provided at the top and drainage at the bottom. One of the most convenient ice-houses we have ever seen was merely one corner of a large woodshed partitioned off by studding and rough lumber. In case where a sightly ice-house is wanted, it may be built with a balloon frame, lined inside with rough lumber, and clapboarded outside. A neat ventilator is set in the peak of the roof, and a drain provided with a "trap" is made below. No floor is needed.

Composting Weeds and Rubbish.—E. L. Bibb, Westchester Co., N. Y.: The compost heap is the best place for any rubbish that will decay and become fitted for manure. Old bones should be broken fine before being thrown into the heap. If weeds that have gone to seed are put in, the seeds will become scattered with the compost and bring future crops. It is much better to burn them. Where the droppings of the pig-pen, hen-roost or stable are added to the compost heap, lime and ashes should be kept out, or they will drive off the ammonia.

Fruit-Room—Dairy House.—John Dent, Ashe Co., N. C.: (1) No filling or packing is necessary in the walls of fruit-rooms. The dead air spaces are made by lining with building paper nailed to the studding inside and out. The edges of the paper lap two to three inches, and the boards are nailed next to it. (2) A sub-earth duct, 140 feet long, leading to the basement of your dairy-house, would supply an equable temperature at all times, provided it is far enough below the surface to escape the effects of the sun's rays, and that no air is admitted to the room except what comes through the duct.

Poultry and Pigeon Show.—A permanent society under the title of the "New York Poultry and Pigeon Association" has been organized by the fanciers in the vicinity of New York city. Arrangements have been perfected by the association for a grand show of poultry and pigeons in the American Institute building next February, 19th to 25th. A liberal premium list and a fine exhibition may be expected. T. Farrer Rockham, East Orange, New Jersey, is the secretary.

Flower-Show in Charleston.—The flower-lovers of Charleston, S. C., have engaged the largest hall in the city for a chrysanthemum and fall floral exhibition, which will be held on Nov. 5th to 8th. The Hon. P. J. Berckmans, president of the American Pomological Society, will act as sole judge of awards. Among other liberal premiums is one of twenty-five dollars and certificate, for the best display of twenty-four varieties of cut-flowers. As the time for the show is in "gala week," the occasion cannot fail to be a notable one.

Deep Plowing or Subsoiling.—R. E. Blundell, Ontario, Canada: Plowing so deeply as to bring up the subsoil and bury the top soil is not advisable on the heavy land which is found in most of Western Ontario. But subsoiling, which is done by means of a special plow or attachment, and merely breaks up the subsoil without bringing to the surface, is specially beneficial where the subsoil is heavy and tenacious.

AMERICAN AGRICULTURIST
FOUNDED IN 1842

OCTOBER, 1889.

The Future of Agriculture in America.

"An expert of the Powell irrigation survey claims that the irrigable lands of the Central West, now wholly barren, will make eight States like Indiana."

The above statement has been given wide circulation by the press of the country, and has been the occasion of much curious comment. If the output from such a vast area is to be added to our present production of food supplies; if Indiana, with her 71,400,000 bushels of corn, and 37,828,000 bushels of wheat, for 1887, is to be duplicated eight times, under what a burden of over-production will our agriculture labor?

Of course, admit the alarmists, these lands cannot all be brought into cultivation at once; not all this year, nor next; nor within this decade. But within another generation they may be, and then our children will suffer, if we do not.

In round numbers, our population doubles every thirty-three years; statisticians expect this ratio to hold good (or very nearly so) for the next century. The coming census will show that we are now a people numbering almost seventy millions; another generation, and we shall approximate one hundred and forty millions; another turn of the wheel of Time, and the United States will hold a population beside which our present numbers are a mere bagatelle.

By the time the last acre of the eight new Indianas is utilized, our population will have moved far in advance of our increased productive area. If production, per territorial area, and consumption, *per caput*, maintain the same relative positions that they now hold, population will have moved far in advance of production.

We are rapidly reaching the territorial limit of the expansion of our agriculture. However much arid regions may be irrigated, and deserts turned into gardens, we will come, bye-and-bye, to the place where the last furrow will be turned, and population, following to this wall, must then recoil upon itself.

That American agriculture will be unable to meet this crisis; will, by stolidly ignoring the inevitable, be unprepared when that time comes, is not to be considered. The preparation for it should begin now, by following such intelligent systems of work as will result in restoring fertility to depleted lands; by never resting contented with *average* crops, but making every acre of land that is cultivated produce to the utmost; studying, in order to attain this end, the needs of soils and crops; methods and amounts of tillage that produce best results.

Every intelligent cultivator knows that there is a possible productive capacity to his land that he does not reach. Our very term "average production" admits this. If upon all our acres, and through all our years of tillage, we reach a certain result that we know is a long way below the best, we are fain to be satisfied, because we are up to the average. No matter how low or poor that average is, custom makes it the standard by which the farming is judged to be good or bad.

The best result that can come from the competition for the AMERICAN AGRICULTURIST prizes will be that of educating the individual farmer toward a higher standard or *average* for both himself and his land. The money value of the prize will be small indeed, compared with the knowledge that two bushels may be produced where but one was before; and while but one can gain the prize, every farmer who carefully and intelligently competes will, in some degree, share in this accumulation of knowledge.

Upon such a foundation as this competition will help to lay, an increased intelligence regarding the possible production from the soil that is now, and has long been, under cultivation, must be built the system of agriculture by which we will sustain the population that, in a few decades, will fill this land in a way that now is almost beyond our power to realize.

The Farmer and the Columbus World's Fair.

If the proposed World's Fair of 1892 is to represent our national industries in the order of their importance to the greatest number of our population, agriculture, with its various branches, must occupy the front rank. More people are directly interested in, and dependent upon, agriculture than upon all other industries combined, and when it is stated, as has recently been done by members of the committee on site and buildings, that "some of the minor buildings, such as agricultural and horticultural halls, might be placed outside of the fair grounds proper," there are well-founded fears that the farmer and his work will not receive the representation they deserve. Never in the history of our nation were there more favorable opportunities to show to the world the wealth, variety, and unlimited extent of our agricultural resources. To neglect this would be almost criminal. No efforts should be spared to represent American agriculture in so creditable a manner that the equal of it has never been seen before in any country on the globe. To accomplish this, it is not enough to erect large halls in which to show the commercial products of the farm, garden and orchard, as in a huge warehouse.

Our leading crops should be represented in living forms, growing on the fair grounds; not in a few sickly specimens in pots, but in plots of sufficient size to give a correct idea of the character and modes of cultivation of each. It would not be impossible nor too expensive to transfer a small Florida orange-grove, in good condition, to the fair grounds, together with all the machinery and appliances used in packing and shipping the fruit; nor to show a fair-sized South Carolina cotton- and rice-field, with all their necessary appliances. Louisiana should be represented by a sugar-plantation, together with mills, presses and other plantation machinery. The methods of Western irrigation should be shown on an extensive scale, and in a similar manner the special crops of every agricultural section of our country should be represented, thus teaching vivid object-lessons, the truth of which would impress itself ineffaceably upon the minds of the visitors. While we would gladly welcome the products of the whole world to our shores, our special aims should be to make our own exhibits specifically American.

An extensive part of the grounds, arranged as a permanent park, should be planted with a complete arboretum, containing at least one specimen of every American tree and shrub that is of any value for use or ornament; likewise, the hardy herbaceous and annual plants, each plainly labeled with its botanical and English name. The work of preparing the ground for this purpose should commence at the earliest moment possible, so that the larger trees could be planted next spring. They would then be in the third year of their growth at the time of exhibition. If this work be delayed, most of the trees will not present a very pleasing appearance at that time.

Another prominent feature should be special exhibitions of the various field crops, fruits, flowers, vegetables, and other perishable products, in their seasons, to be held every week, so far as practicable. The announcements of these special exhibits should be made at an early date, in order to enable growers to prepare for them. Such special exhibitions, if properly managed, would attract specialists in their respective branches from all our States, and many foreign countries. As a special inducement, meetings for the discussion of these specialties might be held in connection with the exhibitions. Of course, in the live-stock and other departments similar exhibitions should be held at stated times. The reports of these sessions alone would form a memorable document of the World's Fair. Features of this kind would keep up a never-failing interest, and the information thus obtained could not be equaled by a lifetime of travel and study.

It is to be regretted that steps for the preparation of this grand Exposition were not taken during the last session of Congress, so that the place for holding the Fair could have been definitely decided upon ere this, and the most favorable site selected, with more consideration and judgment of its many requirements. While we fully appreciate the many advantages of New York City as a place for the holding of a World's Fair, we keenly realize that a creditable representation of our agricultural interests is of paramount importance. If this cannot be accomplished here, it were far better that the World's Fair be held in some place where our nation's most important industry shall receive due recognition, and where it will not be considered a minor part of the Exposition.

Our New Premium List.

With this issue we send the annual Premium List of the AMERICAN AGRICULTURIST and would commend it to the attention of all our readers. In it will be found several pages of choice and interesting reading matter, accompanied by fine illustrations, which will interest every one. There will also be found a list, in splendid variety, of useful articles, which we offer to those who *form clubs* for the AMERICAN AGRICULTURIST.

If the occupant of every home where a copy of the AMERICAN AGRICULTURIST is read would send us one new subscriber our list would be doubled. Every one can surely secure one subscriber with but little effort,

and if a vigorous canvass is made scores of subscribers can be secured. The superior excellence of the AMERICAN AGRICULTURIST and its beautiful illustrations will commend it to every person before whom it is brought, and our friends will have little, if any, trouble in procuring a goodly number of subscribers, if they will only make the effort.

Try it, friends, and do what you can to aid us in extending our list. You will be well paid for every club procured and in addition will have an opportunity of participating in our award of special prizes. Send for an outfit and go to work at once.

Now is the best time of the year to procure subscribers, for those you solicit during November can be offered *two months' subscription free*, as we give all new subscribers for 1890 the November and December issues of this year, providing the subscription is received before December 1st, and date the subscription as paid to January, 1891.

The AMERICAN AGRICULTURIST is too costly a magazine to scatter promiscuously, but we should be glad to receive from our subscribers the addresses of any of their acquaintances whom they think would be likely to subscribe. We will take pleasure in sending a copy of this magazine to such persons in the expectation of securing their subscription.

Address all letters relative to subscriptions to AMERICAN AGRICULTURIST, 751 Broadway, New York.

The Outlook for Wheat.

J. R. DODGE, GOVERNMENT STATISTICIAN.

The New World has surprised the Old with its wealth of wheat production for so many years that its people, or that portion, at least, who take superficial views of its affairs, apparently believe that the wheat-growers of the United States dominate all markets and fix all prices. It is a great mistake, as growers and dealers have found to their loss. Farmers hold for higher prices, and take lower, and suffer all forms of wastage by holding; and board-of-trade bulls boom their holdings, engineer a corner, raise prices of elevator stocks, stop exportation for a few days, until financially cornered themselves. Foreign buyers all the while are serene in the confident expectation of abundant wheat, at fair prices. And they get it.

A Short Crop Here excites strong belief in higher values, but the price declines. An abundant crop goes off freely at good prices. Why do such anomalies occur? They are not anomalies, but natural results of the law of supply and demand. With short crops elsewhere, a large one here may not make an average world's product; then prices are high both here and there. With abundant yields in other countries, and low returns here, more than an average product may exist, depressing prices. This would indicate that the remainder of the world holds the longer lever, which is a fact, as North and South America together only produce a fourth of the wheat in the world. These facts furnish a key to the fluctuation of prices.

Prices Have Been Lower in Liverpool in recent years than for a previous century. Is it because of greater production? There is some increase in certain countries, but probably the more efficient factor in preventing fluctuations and high prices is the extension of transportation facilities; in number of lines and frequency of service, by which the fresh harvests in every month in the year are gathered into the holds of fast steamers, and carried to Liverpool, which is the Rome to which all roads traversed by wheat transports leads very directly. Thus is an equilibrium in varying production of a series of years brought about. There is neither beginning nor ending of the wheat year nowadays. From July to July production may be relatively lean; from January to January comparatively fat; mix the two products in one bin, and plenty exists in moderation, and prices remain in some degree of uniformity. Northern and Southern Hemispheres, with winter in one while summer ripens wheat in the other, add to the stores of the world's wheat in all seasons of the year.

The high prices of former times have in large measure been the result of wars and preparation for war. Waste results, commerce is interfered with, and inflation follows. A long peace has made the world's stock of wheat go further, with quicker and more equable distribution. This in part accounts for low prices, without reference to increase of wheat-growing. Some wheat-growers in the Northwest understand this, and are said to be praying for European war.

The Wheat Product of the World, so far as approximate statistics can fix it, usually falls between 2,100,000,000 and 2,200,000,000 of bushels. About one-tenth of this is so obscure and impact a quantity that commercial authorities leave it out of their calculation. It nevertheless exists, and can be found, but not so promptly or quite as precisely as crops of some other countries. How is it distributed?

If Europe is almost the only market for wheat, it is also the greatest producer, averaging 1,200,000,000 bushels in round numbers. The real average is rather more than this volume. North America—the United States, Canada and Mexico—produces over 500,000,000 more. India grows about half as much as North America. This leaves only about one-tenth for Australasia, Northern Africa, Western Asia, and the islands of the sea.

Who are the Buyers of Wheat? Very little wheat is wanted outside of Europe. A very small quantity of flour may be sold in the West Indies, Brazil, and elsewhere, with small chance to augment the trade. Europe is the only market worth considering. The inhabitants number 350,000,000, and use less than four bushels per head, of which less than half a bushel is imported. As the seed is equal to the amount obtained from foreign countries, the opportunity for unlimited wheat-growing would appear to be a poor one. From 1877 to 1886, inclusive, the countries of Europe imported from countries of other continents 144,000,000 bushels per annum, in the form of wheat and flour. A few unimportant districts not included in this enumeration export more than they import and could not swell this aggregate. Russia, Roumania and Austria-Hungary always have a surplus, which goes to other European nations. The record of net average wheat exports or imports of these countries for these ten years is as follows:

	Net Imports.	Net Exports.
Austria-Hungary		3,436,462
Belgium	15,058,118	
Denmark	956,308	
France	43,110,903	
Great Britain and Ireland	102,447,840	
Germany	14,239,817	
Italy	12,011,447	
Netherlands	7,833,543	
Norway	233,810	
Portugal	3,225,241	
Roumania		13,144,984
Russia in Europe		71,422,743
Spain	4,095,452	
	203,212,579	88,004,189

In addition, the net imports of flour were 7,463,445 barrels, and net exports 954,278 barrels. These imports were all taken by Great Britain, the Netherlands and Sweden, and the only countries exporting were Denmark, France and Spain, all of these countries having a net deficiency.

This presents in a nutshell the actual requirements of recent years, which include some in which the requirement was the greatest ever known. It shows how limited is the demand for wheat grown outside of Europe. Had Great Britain been eliminated from the market with her 133,000,000 bushels of imports of grain and flour, only 11,000,000 bushels would have been required throughout all Europe. The situation is therefore practically this: the surplus of the crops of the world go mainly to Great Britain.

What She Imports.—Now let us take a glimpse at the supplies which Great Britain has obtained during fifteen years, from 1872 to 1886 inclusive, and we find the following results, in hundred weights of 112 pounds:

Countries.	Cwts.	Per Ct.
United States	498,030,449	51
British India	76,890,078	7.9
Russia	132,316,944	13.6
Australasia	37,665,834	3.9
All other countries	229,479,860	23.5
	974,383,165	

More than half of the supply has been furnished by this country. The next largest contribution is by Russia in Europe, leaving little more than a third to be sent by India, and all other countries. The commercial world, which looks only at the present, got quite excited over the idea that India would supplant America in the wheat trade, when those who knew anything of the conservatism and food economies of that oriental land were sure that their wheat surplus would be quite as liable to decrease as to increase; and already a marked decline in exportation has set in. But for the exceptionally good crops of recent years and the depreciation of silver in Great Britain, the currency that purchased the grain and passed as national currency in India, the exportation would have dwindled earlier.

What of the prospects of wheat-growing in this country? It will always be a paying business for farmers, if properly managed, and not extended beyond the requirements of home and foreign markets. The recent low prices have been produced by the growers themselves. In 1880, when there were nearly 36,000,000 acres, the country required but 24,000,000. One-third of the product was exported—186,000,000 bushels—a much larger volume than went out previously, and about 50,000,000 bushels more than the average since. It is simply because it has not been wanted, since the recovery of Western Europe from the low yields of bad seasons prior to 1880.

Our Home Consumption has increased nearly 70,000,000 bushels since that date, and in the next ten years will probably be enlarged by 85,000,000, while there is no prospect for half that increase in exportation. Our main reliance for the profits of wheat-growing is upon the American people.

The Present Crop is slightly above an average in yield, and but very slightly. The October preliminary estimate of the Department of Agriculture is 12.8 bushels per acre. The acreage is not fully determined, but is probably not very far from 38,000,000 acres. A medium expectation at present would be in the neighborhood of 485,000,000 bushels, Winchester measurement, with a reduction of at least 15,000,000 bushels for weight short of sixty pounds per bushel. This is not given as an estimate, but as an indication of the probabilities, as the test of threshers' records and the revision of areas may both affect the result slightly.

The Yield of Wheat in this country is too low. The cultivation in the spring-wheat districts is wretchedly careless. It is said to be exhaustive of fertility, but the yield is reduced by the growth of seeds rather than by loss of fertility. Such scratching of the soil is slovenly, but the soil is not exhausted by a few poor crops of grain. In the winter-wheat region there is also too much carelessness in cultivation, but the rate of yield is as large as in the newer lands of the far West. Scientific farming is necessary, rotation and superior cultivation, to increase the rate of yield. The sands of Belgium produce about twice as much per acre as the rich prairies of Dakota. The difference is in the man, and not in the land. Eventually, this country may produce as much, but probably not while wheat lands are cheap, and the effort is to gain broad acres rather than grow large yields of wheat.

The Prize Crops Harvested.

The Oat-crop reports should have all reached us on October 1, but, owing to many causes, quite a number of contestants gave good reasons for being unable to get their report to us at that date, although by the time this issue goes to press they will have been about all received. The Wheat-crop reports must be in October 25, and there will be no extension of that date. All Potato-crop reports must reach us November 15 at latest. Quite a number are on hand now. A large number of contestants in the Eastern and Southern States pulled out of the contest, owing to blight and rot, but some very large crops are being reported, even from this section, while the Western reports are quite satisfactory. The Corn reports must all be in by December 10 at the latest.

The prize award on the Oat crop will be announced in the AMERICAN AGRICULTURIST for December, and an interesting report it is sure to be. The reports as to culture, etc., have been on the whole made out with remarkable intelligence on all the crops. There have been some very extravagant guesses sent in as to the crops that would receive the first prizes of $500 each. But the actual facts bid fair to substantiate them, especially in case of Corn. On the whole, as we look over the reports thus far received, the facts brought out by this competition promise to be of exceeding value.

SCIENCE IN FARMING.

A Noted Scientist Gone.

George H. Cook, Ph. D., LL. D., an engraving of whom, from a recent photograph, is herewith given, was born at Hanover, Morris county, New Jersey, January 5th, 1818, and died suddenly on September 22d, 1889. From the schools of his native home he went to the Rensselaer Polytechnic Institute at Troy, New York, where he was graduated in 1839, and afterwards retained as instructor for four years. From 1848 to 1850 he was professor in the Albany Academy, and principal of the school in 1852 and 1853. In the latter year he accepted the chair of chemistry and natural history in Rutgers College, New Brunswick, N. J. Professor Cook was assistant in the New Jersey Geological Survey, from 1854 to 1856, and in 1864, upon the new organization of the survey, he was appointed State Geologist, a position which he held until his death, as well as the professorship of geology and agriculture, and the vice-presidency in Rutgers College. As a branch of this institution, through Dr. Cook's efforts, the Rutgers Scientific School was opened in 1862. The New Jersey Agricultural Experiment Station was established at New Brunswick in 1879, with Dr. Cook as its director. In 1888 he was also appointed director of the new Experiment Station established under the Congressional act known as the "Hatch bill." Dr. Cook's fine reputation as a man of science rests in large part upon his excellent and extensive work, included in the New Jersey Geological Survey. For example, one has but to glance at the large number of superior maps of the State to be deeply impressed with the thoroughness and accuracy of all the details of the survey. His enduring work for agriculture has been mainly in the direction of the relation of soils to plant nutrition—a natural outgrowth of his intimate knowledge of rocks and their formation of soils, coupled with a demand coming from the crop-growers of New Jersey for profitable commercial fertilizers. Under his supervision, the State Station, during its ten years of existence, has almost revolutionized the use of commercial fertilizers in the State, and has been a light to the farmers of other States where minerals are used as food for crops. The reports of the New Jersey Geological Survey, and those of the Agricultural Experiment Station, therefore, are the enduring records of the unbounded energy, penetrating judgment, and high scientific attainments of Dr. George H. Cook.

GEORGE H. COOK.

Drying Preferred to Ensilage.

Prof. J. W. Sanborn is much criticised for trying to get at the real and unbiased facts about ensilage by practical experiments in field, silo and feed stable. His critics forget that such trials are the kind of tests that farmers want and need, even if they don't agree with the results. His latest conclusions (Bulletin 8, Missouri) show that corn fodder can be stored dry at less cost than it can be siloed; a given amount of actual food in the dry fodder lasted much longer when fed to cows than in the form of ensilage. Ensilage-fed steers made an apparently greater growth, but it was apparently less substantial than that of steers fed dry fodder; milk from dry fodder was richer than from ensilage, 20½ pounds of the former making a pound of butter against 22¾ pounds of the latter; the dry fodder milk yielded up more of its fat or was the better churning milk, contained the larger per cent of solids and gave the better butter, which seemed to keep better; the dry food was handled cheaper and the cows better maintained than live weight on it. Air drying, with compact storage in a compact form in a good barn, is concluded to be the more economical method, while the disadvantages of air-drying are held to be no greater than the disadvantages of the silo system. But the practical point is that farmers won't utilize their corn-fodder by air-drying, while they will ensilage it at a profit.

Notes from the Stations.

The claim that wild plums and the cultivated species of native plums are curculio proof, and that their cultivation would result in the extermination of their pest, seems to have been disposed of by Prof. F. M. Webster's work at the Indiana Experiment Station (Bulletin 25).

That good paper can be made from the refuse of sugar-cane, after the sugar has been extracted, is thoroughly proven by samples at the Paris Exposition, which were furnished by the Louisiana Department of Agriculture. Tests of this material for paper-making purposes are also being conducted on a large scale, at a Northern paper-mill.

A very complete digest of the annual reports of thirty of our stations will soon be issued from the Office of Experiment Stations in the United States Department of Agriculture. The special feature of this work is the index, which is very full and complete, being not only an index to the digest, but practically an index to the reports themselves. It is issued as Part I, the intention being to include a digest of the reports of the remaining stations in another volume to be known as Part II. This digest work will thereafter be continued periodically, so as to cover all the Experiment Station reports. Our subscribers have only to write to Prof. W. O. Atwater at Washington to receive this instructive compilation.

In 150 samples of grass and forage seeds tested by the Delaware station, the seeds of 26 different weeds were found. The common Plantain (*Plantago major*) occurred in 44 different samples; Fox tail grass (*Setaria*) in 30; Sheep sorrel (*Rumex acetocella*) in 27; Rag weed (*Ambrosia artimisiæfolia*) in 25; Smart weed (*Polygonum*) in 17; Pig weed (*Chenopodium album*) in 17; Narrow-leaved plantain (*Plantago lanceolata*) in 15 samples of seeds, and so on. Yet the samples are pronounced above the average in purity! This list shows how weeds get upon the farm, for not only does the farmer sow them, but he puts them on his best land, where they will be sure to grow. If, for instance, the farmer sows eight pounds per acre of a certain sample of clover seed that contained nine per cent of impurities, the weed seed present are sufficient to supply a plaintain seed every two feet in drills two feet apart over the whole acre, a rib-grass seed every seven inches in drills one foot apart, and so on with six other bad weeds.

The ripening period in Kansas is so short and the edible leaves and blades so few that to attempt to cure the stalks with the ears on them results in a coarse, bulky fodder of little value. Even with the best of such fodder probably one-third of it is wasted when most carefully fed. Prof. Shelton concludes (Bulletin 6) that in Kansas corn for fodder must be grown by itself, likewise corn for grain. In Eastern Kansas an excellent crop of fodder may be grown after the wheat crop has been harvested. Last year a large yield of fodder was secured at Manhattan, bearing 35 bushels of corn per acre, the seed of which was planted July 6th. He prefers wooden silos, cuts the silage into half-inch lengths, and fills either quickly or leisurely. He finds no advantage in treading ensilage closely, except at the sides and corners, so that settling may go on evenly. A cover of tarred paper with 18 inches of green grass over it excluded the air. The actual cost of cutting up the corn, hauling it 50 rods to the silo, and storing it therein, was 62 cents per ton.

Remarkable yields of hay, especially of alfalfa, are often reported, but the Southern white corn grown for ensilage at the Minnesota Experiment Station last year produced over six tons per acre of water-free substance or dry matter. When the large amount of water in the best cured hay or corn fodder is considered, this is a remarkable crop. The flint corn planted in the same field yielded four tons per acre of water-free substance. These two kinds are therefore concluded to be the best representatives of their classes of corn for ensilage, and they are specially well suited for feeding purposes. The single feeding experiment conducted with this ensilage showed that for fattening cattle more value per ton was received from the flint corn ensilage than from the Southern variety, in spite of the larger yield of the latter. But for milk the actual dry matter of the Southern corn was nearly equal in value, pound per pound, to the dry matter of the flint corn. The flint corn was the best for fattening, owing to the large amount of well-ripened ears.

The Association of American Agricultural Colleges and Experiment Stations, at its Knoxville meeting in January, 1889, appointed a committee to devise methods for co-operative work in horticulture and especially in testing new varieties of fruits and vegetables. This committee called a meeting of Station horticulturists at Columbus, Ohio, in June, 1889, for consultation. At this meeting a committee on the nomenclature of vegetables was appointed. The rules for nomenclature formulated by this committee are:

(1.) The name of a variety should consist of a single word, or at most, of two words. A phrase, descriptive or otherwise, is never allowable; as, *Pride of Italy, King of Mammoths, Earliest of All.*

(2.) The name should not be superlative or bombastic. In particular, all such epithets as *New, Large, Giant, Fine, Selected, Improved*, and the like, should be omitted. If the grower or dealer has a superior stock of a variety, the fact should be stated in the description immediately after the name, rather than as a part of the name itself; as, "*Trophy*, selected stock."

(3.) If a grower or dealer has procured a new, select strain of a well-known variety it shall be legitimate for him to use his own name in connection with the established name of the variety; as *Smith's Winningstadt, Jones's Cardinal.*

(4.) When personal names are given to varieties, titles should be omitted; as, *Major, General, Queen.*

(5.) The term *hybrid* should not be used, except in those rare instances in which the variety is known to be of hybrid origin.

(6.) The originator has the prior right to name the variety; but the oldest name which conforms to these rules should be adopted.

(7.) This committee reserve the right, in their own publications, to revise objectionable names in conformity with these rules.

FARMING IN FOREIGN LANDS.

The world's product of wine last year amounted to a little over 3,000,000,000 gallons, coming mostly from France, Italy and Spain. California furnished 19,875,000 gallons.

Servian farmers who cannot pay their tax arrears in money are now allowed, by the finance ministry, to pay in cereals. The military authorities take the grain at a fixed price.

During six days of the Royal Agricultural Show, at Windsor, $70,704 were taken at the gates exclusive of the amount received for season tickets. This is more than $24,000 above the receipts of any previous meeting, even including the season tickets.

The growth of egg importations into England during the last twenty years has been remarkable. In 1864 the value of the eggs imported was $4,000, 000, while in 1888 it had risen to $15,000,000. This growth will be maintained unless something is done to extend poultry-keeping in England.

During the year ended March 1st last, Victoria planted 1,217,191 acres of wheat, 197,518 acres of oats, 43,074 of potatoes, and 411,232 acres of hay. The total yield for the crops were: Of wheat, 8,647,709 bushels; oats, 2,803,800 bushels; potatoes, 131,149 tons, and hay 308,117 tons. These figures indicate a decrease over those for the previous year.

A new Persian dye plant, the zalil, has been discovered in India. It grows freely in Afghanistan and Khorassan, and its flowers, which are of a bright yellow color, are dried and used as a dye throughout Persia and Upper India. It is a perennial, and the blossoms grow on spikes two feet high. They are used as medicine, as well as for dying purposes.

A national exhibition of agriculture and sylviculture will be held at Vienna next year, from May 15 to October 15. The exhibition will include machinery and implements used in agriculture, artificial manures, remedies for sick animals, etc., models, plans, designs, statistical information, inventions dealing with the utilization of waste material, and information and suggestions respecting the food supply of large cities.

Another large purchase of thoroughbred stock has been made in Scotland by Messrs. Nelson & Son, of Liverpool, for the South American trade. The purchase included 241 picked Shorthorns, a score of Polled one-year-old bulls, and some sixteen Clydesdale stallions. Our English friends seem determined to supply the growing market "to the south of us," but American breeders are beginning to export thence with satisfactory returns.

Butter and cheese are the chief exports of Holland. In 1887 she shipped about 173,323,600 pounds of butter, valued at $25,575,635, and 67,482,000 pounds of cheese, worth $4,381,743. Most of the butter and fully one-half of the cheese went to England, and the remainder to France, Hamburg, the United States and other countries. It is estimated that the exports of artificial butter during the last two years have far exceeded those of the natural product, and this year will show a still larger increase.

There certainly must be an enormous market for American fruit in England when it is known that only one fruit-evaporator was exhibited at the recent royal show, and that by a German manufacturer. The new Strawsonizer, or spraying machine, also attracted great attention; but American implement manufacturers who looked into it were not as enthusiastic over this new innovation as the English trade have been. The invention is being injured from the American standpoint by being worked as a big financial scheme.

The wonderful improvement in the sugar beet industry of Germany is strikingly shown by the new sugar law, which went into effect in August of last year. The first law of 1868 imposed a tax of $2.50 on each hundred weight of sugar, being on the basis that it took twelve-and-a-half hundred weight of beet roots to get that quantity of sugar. When the sugar was exported, a draw-back of $2.35 was allowed. This afterwards turned out to be very advantageous for the manufacturers, as the improvement in the quality of the beets raised in the process of manufacture employed enabled them to get one hundred pounds of sugar from nine hundred weight of roots.

Experience has shown that when horses are clipped in winter they thrive better on the same or less food than when not clipped. This fact has been investigated by Prof. Fred Smith, of England, who finds horses' sweat rich in albumen, so much so that it will take six ounces of oats to furnish the albumen found in one pint of sweat. He adds: "I do not know how much sweat a horse with a long coat loses with laborious work, but we may state as a practical rule that clipping must be equivalent to at least an extra pound of grain per day."

A new process of butter-making is reported from Australia. Air is introduced into the cream in the churn through an intermediate vessel, in which is stored water and a harmless solution, which purifies the air and otherwise renders it suitable for producing the desired effect upon the cream. The air-pipe opens into the churn near the bottom, through which the gases are driven out. The butter runs to the top of the churn, and the buttermilk is run off from a tap at the bottom. The process lasts from twenty minutes to forty or sixty minutes, according to the condition of the cream and other circumstances.

Tobacco culture in Germany is steadily increasing, and 53,025 acres were devoted to it last year within the limits of the German customs union, against 48,615 in 1886. The crop of dry (house-cured) tobacco in 1887 reached 40,866 tons. The gross receipts, after deducting taxes, amounted to $3,260,-600, which were considerably smaller than those of the former year, notwithstanding the larger area, for the reason that the culture and growth of the plants were much impeded in the spring by drought, and in the fall, in many districts, by frosts, necessitating gathering the crop before the plants had fully ripened.

The English government is very much concerned over the pleuro-pneumonia scourge. From Ayrshire on the west to Forfarshire on the east the disease is terribly prevalent, and fresh outbreaks are reported every day. The loss sustained by this latter shire through pleuro-pneumonia during May, June, and July amounts to over $15,000, while that for the next quarter promises to be twice as much. In Kirkcaldy the scourge has become so bad that the local authority has prohibited the bringing in of any cows except those for slaughter; which action has brought about famine prices for butter and milk in that vicinity.

In the Cheddar cheese-making districts of Scotland, it is the custom for the contractor to enter into a sort of partnership with the farmer in the production of cheese. The reason for this system is that the cheese-maker does better for the farmer when he has an interest in the quantity and quality of cheese produced. The farmer lets the cows to the contractor, providing food for them, as well as all the necessary dairy utensils, while the contractor finds the labor and materials used for making the cheese. The contractor pays the farmer a rental of 480 pounds of ripe cheese for every cow, and 320 pounds for each heifer, taking for his share the surplus cheese, the whey, the calves not needed for stock, and a certain quantity of cheese for each calf nursed.

"The recent introduction of the Cooley system of setting milk, together with many other American appliances used in the manufacture of butter and cheese, has given quite an impetus to the dairy farming in New South Wales." According to Consul Griffin, of Sydney, there are now about thirty co-operative factories in that country where, three years ago, there was only one. An active demand is springing up for thoroughbred butter cows and bulls, with which to improve the native dairy stock. The supply of Jerseys especially is very small. The co-operative system of managing the factories has become very popular during the past year, but the earlier factories are mostly proprietary. The industry is protected by a duty of four cents per pound.

The capital invested in government irrigation enterprises in the Northwestern Provinces of India is about $40,000,000. The revenue received for the use of the water nets three-and-one-third to four-and-one-half per cent interest on this sum annually above all expenses. About 8000 villages or farming settlements receive water from 35,000 outlets in the distributions of the five main canals. The cost of maintaining the system is from forty cents to one dollar per acre annually, averaging seventy-one cents per acre in 1887. The value of the crops raised that year on the irrigated lands was $22,000,000, of which sixty per cent was in wheat. The canal system has been wonderfully developed in the past twelve years, and now represents nearly twice as much invested capital as in 1876.

So many sugar plantations have of late years been abandoned in the once great sugar-producing country of Dutch Guiana that the prices of sugar there are rapidly advancing. Taking advantage of the situation, speculators have started the cultivation of cane on the abandoned estates. Among these a Dutch company are preparing to erect a sugar factory near Paramaribo, and about one hundred immigrants from Java or Maduro in the East Indies will be introduced for this purpose. The following are the astonishingly low premiums to be paid to these immigrants for a five years' contract: One male and female (married) not older than 40 years, $208; one male from 15 to 40 years, $100; one female from 15 to 40 years, $92; one boy or girl from 10 to 15 years, $56; one child from 5 to 10 years, $36.

The acreage in hops in England has steadily decreased during the last five years. Only about 52,000 acres are planted to hops this year, against 71,327 in 1885. Then, too, while in 1885 there was regular employment for 28,000 men and casual employment for 320,000, last year there was regular employment for only 21,000 men and casual employment for 230,000, in the hop industry. The principal reason for this decrease is believed to be foreign competition in conjunction with English free trade; and an import duty on foreign hops is the remedy suggested by the growers and their friends in Parliament. Another cause exists in the fact that a cheap substitute has been found for hops in beer. The opinion was recently expressed in the House of Commons that, if something was not done to aid this once thriving industry, it would soon be ruined, and a committee was appointed to inquire further into the causes and report as to the best remedy.

It has been ascertained by the Dominion experiment farm at Ottawa, Canada, that a wheat can be imported from the northern climates of Russia equal in quality to the Red Fife A No. 1, but which will ripen ten days or two weeks earlier. From present indications this wheat will in time supersede the Fife variety altogether in Canada, for, from its early maturity, it will escape the frosts of the latter part of August, which the Fife seldom does. Other interesting experiments have been made with Russian fruit trees, and the Dominion minister of agriculture now feels satisfied that an apple tree can be introduced in the Northwest which will bear fruit equal in every way to that grown in Ontario. The farm is also experimenting with various varieties of barley, especially with a view to sale in the British markets, and has discovered that some twenty varieties of this grain can be grown in Canada which take first rank in the English market.

The United States is nearly twenty times the size of France, but France is only second to us in wheat production. She produced an average of 285,862,300 bushels of wheat annually from 1875 to 1886, against 450,410,466 bushels in the United States. The total potato crop of France averages nearly twice as much as the United States crop. More than one-fourth of the area in farm and garden crops in France is devoted to wheat and other cereals, which are being grown extensively in many sections where vineyards have been unprofitable. Indeed, only about five million acres are now devoted to grapes. There has been a gradual increase in the yield per acre, all over France, during the last century. This is ascribed to the organized efforts of the government and of the farmers to better their condition, by a system of agricultural colleges, schools, and experiment stations. In thus encouraging agriculture France spends $8,000,000 annually, while our government and the States together do not spend half as much for this purpose. Here are some interesting comparisons of average annual acreages and yield in bushels. (The acreages and total yields are given in thousands of bushels, thus, France averaged annually 17,111,000 acres of wheat that produced an average of 285,760,000 bushels, etc.):

	FRANCE, 1877-87.			UNITED STATES, 80-88.		
	NO. ACRES	YIELD PER ACRE.	TOTAL YIELD.	NO. ACRES	YIELD PER ACRE.	TOTAL YIELD.
Wheat.	17.111	16.7	285,760	37,166	12.1	448,858
Rye...	4.364	15.9	69,398	2,083	12.0	25,000
Barley.	2,519	20 5	51,645	2,150	21.0	45,150
Oats...	8.755	26.8	234,650	20,687	26.5	548,838
Buc'w't	1,574	18.6	28,692	933	12.0	11,000
Corn...	1,498	17.7	26.528	68,930	23.5	1,616,718
Potat's.	3,063	78.6	240,783	2,350	78.6	184,710

New Publications.

The English Flower Garden; Style, Position and Arrangement, followed by a Description of all the best Plants for it; their Culture and Arrangement. Forming Vol. I of the Garden Cyclopedia. By W. Robinson, London: Second Edition. John Murray, pp. 832, octavo.

The second edition of this valuable work will be welcomed by every lover of flowers. Important changes have been made, which are the result of the study and experience of the author during the five years which elapsed after the appearance of the first edition. The book consists of two parts: first, a general introduction, dealing with "laying out." The instructions and suggestions in this part, though designed expressly for English soil and climate, are well worthy of study in any latitude. They are the fruit of the ripened judgment, experience and skill of the author, who is widely known as the founder and editor of "The Garden," and other horticultural serials, as well as the author of many standard works on floriculture. The second part describes a large number of plants suitable for the garden, which grow in the open air in Britain, with directions and hints as to the positions suited to each. American readers will bear in mind that these directions are designed for the climate of Britain, and will not in every case be equally applicable in this country. The descriptive list of plants is arranged alphabetically, for convenient reference. The whole is profusely illustrated with wood engravings. Sold by Orange Judd Co. Price, $6.

A Popular Treatise on the Winds: Comprising the General Motions of the Atmosphere, Monsoons, Cyclones, Tornadoes, Waterspouts, Hail-Storms, etc. By William Ferrel, M. A., Ph. D., late Professor and assistant in the Signal Service. New York: John Wiley & Sons; pp. 505, 8vo.

The weather bureau of the United States Signal Service, as organized by the late Gen. Myer, has been of great importance to the country—mainly in its direct results, and incidentally in directing public attention to meteorological science. Of the latter, nearly every intelligent person has at least a smattering, acquired from observation, and from reading the daily weather reports. The work under notice brings the elements of the science within the comprehension of every reader. Dr. Ferrel was for a long time connected with the Signal Service, where the study of atmospheric changes was not merely a matter of scientific interest, but of daily duty. His book is very comprehensive, and is written in clear, lucid style. Sold by the Orange Judd Co. Price $4.

Proceedings of the Fourteenth Annual Meeting of the American Association of Nurserymen, held in Chicago in 1889.

This report is one of the most valuable documents of the kind that has fallen under our notice. The discussions are replete with interest; the papers are thoughtful, and of practical value. The report is a handsome volume of 136 octavo pages, illustrated by two portraits and a colored fruit-plate. Charles A. Green, Rochester, N. Y., is the secretary.

BRIEF COMMENT.

Dr. Griffith's *Treatise on Manures* is meeting with an immense sale in England, and is also very favorably received in the United States. It is quite a technical book and goes into the manufacture of fertilizers thoroughly. It is different from any other book on this subject. New York: Orange Judd Co.; pp. 400; price, $3.

Preserving Green Forage without heat or fermentation, by the use of a patented silo governor, is described in a book of 160 pages by the inventor, S. M. Colcord. Chicago: Howard & Wilson. New York: Orange Judd Co. $1.

Chloroform for Farm Stock is an anonymous pamphlet from the *Guide* office, Arbroath, Scotland, that shows how to use the anæsthetic in all painful operations.

The Lands of the Great Sioux reservation in South Dakota, illustrated in the AMERICAN AGRICULTURIST for August, will not be opened at present. The Department of the Interior desires the AMERICAN AGRICULTURIST to say that the date of its opening will be given at the proper time through the usual channels. The Department and the President evidently agree in the opinion that the reservation cannot be opened to settlement until further action by Congress. This means that it will be closed until spring. Such a decision will doubtless prevent much suffering among would-be settlers this winter.

Matters of Public Interest.

Good Corn in South Carolina.—Mr. R. M. Allison harvested his corn crop on September 25, grown on one acre, and contested for the prize of $500 offered by the AMERICAN AGRICULTURIST and supplemented by an equal amount by the South Carolina Agricultural department. Mr. Allison planted two acres. On the day of the harvesting a number of his neighbors assembled to witness the result. There were three witnesses selected, consisting of L. Lowry Smith, J. A. Hope, and J. C. Chambers; and W. L. McDonald, of Yorkville, was present to represent the AMERICAN AGRICULTURIST. The *Yorkville Enquirer* of October 2 thus describes the affair:

Under the rules the acre was re-surveyed in the presence of the witnesses, after which each one of the witnesses went through the acre and selected average ears sufficient to weigh 100 pounds after being shucked. That gathered by the witnesses was then shelled in three separate heaps. The shelled corn was then weighed. Two of the heaps weighed 86 pounds of corn each, and 14 pounds of cobs each. The other heap weighed 87 pounds of corn, and 13 pounds of cobs. Then the entire acre was gathered, shucked, and weighed. The unmerchantable or immature corn was weighed separately from the perfect corn. Of the perfect corn, there was 6,343 pounds; of the unmerchantable, 174 pounds; a total of 6,517 pounds. By calculation it was found that the yield of the first acre was 100 bushels and six quarts. This acre was planted in the Maryland variety. Eight hands were two hours and fifty minutes gathering the corn from it.

In harvesting the second acre, the same rules were observed as in the first. The 100 pounds of average ears gathered from it by each witness weighed respectively 81 pounds of corn, and 19 pounds of cobs, 78 pounds of corn, and 22 pounds of cobs, 76 pounds of corn, and 24 pounds of cobs. The perfect corn weighed 7,282 pounds, and the immature 166 pounds. As per rule, the yield of the second acre was 104 bushels, five quarts, and a little over. This acre was planted in the Garrett variety, and one month later than the first acre. From that planted in the Maryland seed, Mr. Allison gathered 6,760 pounds fodder, green, weighing 4,420 pounds when cured; and from the Garrett seed he gathered 3,750 pounds fodder, green, which weighed 2,450 pounds dry.

Mr. Allison was unfortunate in having his Maryland corn overflowed by freshets four times during the summer, and it is estimated that the crop was damaged thereby at least two-fifths. But with this drawback he may be proud of his success, and should he fail in securing the prize, he has already demonstrated, under serious disadvantages, what may be done on one acre of York county land.

Agriculture in the Schools.—Mr. John W. Ross, Polk Co., Missouri, writes: "I heartily endorse the suggestion in the October number of the AMERICAN AGRICULTURIST that agriculture be taught in our common schools. Let us have less of the ologies, isms and fanaticisms that are making theorists, visionaries and zealots of our children and unfitting them for practical life. Too many now, when taught a smattering of the isms, imagine they are too good for the plow, and move for one of the already over-crowded professions, or become politicians, or strike out as great moral reformers, and come to naught. Yes, let agriculture be taught in our schools in a simple and attractive form, and the children will be better prepared for practical life. They will learn that agriculture is a science worthy of study, requiring a mental training as well as the learned professions. Farming will then appear to them more elevated and honorable, and they will strive to fully inform themselves and become better and more successful farmers. Then, to be a first-class farmer will be regarded as something to be as proud of as to be learned in one of the professions. It is lamentably true that many look upon farming as a life of drudgery and of low degree, dependent upon physical effort only, which is all wrong. If taught as suggested, this idea will soon pass away. Agricultural literature will be sought after and appreciated, and farming will be looked upon from a higher standpoint, as based on a scientific education. It will then be regarded as quite as important to the farmer to keep up with the agricultural journals and literature as it is to the lawyer or doctor to keep up with the literature of his profession. When looked upon in its true light, agriculture is a most honorable calling, and when properly understood will be sought after and a higher ambition and a more generous and vigorous rivalry will lead to greater success and a higher degree of perfection. You are moving in the right direction. Push to practical results, and you will receive your reward."

Every Farmer Should Take It.—I do think every farmer should take the AMERICAN AGRICULTURIST, and I will not fail to recommend it as occasion may present.
M. T. WRIGHT, Montgomery Co., Kans.

"There's Millions in it!"

Fifty million pounds sterling—two hundred and fifty million dollars—"of English gold now lying idle in the London banks, for want of good-paying investments." The millions of English gold waiting for American heirs has proved to be a myth, and now the overflowing wealth of our British cousins is reported to be waiting for investment. As a medium through which Western people can reach out for this gold, the "New York and London Financial Exchange" offers its services, and is flooding the West with its circulars. It holds out that every one who has "property"—which may doubtless include corner lots in paper cities, "farms, ranches, bunches of cattle, horses, or mines"—to sell, has only to send five dollars and be placed in communication with "moneyed people who are over-anxious to make investments in the West." The "over-anxious" moneyed men are expected to bite so eagerly at the bait that large hauls will be landed without effort. Now, the fact is, that all the investments of foreign capital in this country during recent years have been made in large amounts, for breweries, grain-elevators, mills, and other productive property, and only after searching and careful investigation. English syndicates are not formed for small purchases. No investments are made by them except in very large sums, and for property which can be made productive only by the employment of heavy capital. Even if it were otherwise, this so-called "Exchange" gives no assurance of ability to advance its ostensible objects. No street or number is given, only a post-office box.

Tricks of Horse-Dealers.

The horse is one of the most honest and useful creatures in the world, but those who deal in horses are not all distinguished for the same qualities. A very amusing book is Ballinasloe's "Confessions of a Horse-Dealer," in which are shown up some of the tricks of the English "copers." But there are fellows in New York in comparison with whom the English copers are guileless babes. The latter, by means of sharp tricks, will sell an inferior horse, but the former will sell a good horse for its real value, and then keep the horse and the money. A leading lawyer of St. John, N. B., while on a recent visit to New York, was lured to a stable to inspect a carriage-pony. He liked it and paid $300 for it, to be delivered at the railroad station in New York on the evening when he was to start for home. He reached the station and found there, instead of his handsome pony, a sorry old beast, which would have been dear at one-tenth the price he had paid. The lawyer postponed his departure, and visited the stable where he had bought the pony. But the seller could not be found, nor any one else who would own to any knowledge of the transaction. Any person who wants to buy or sell a horse in New York should use reasonable caution in ascertaining where to find the right kind of a place. There are large horse-dealing establishments in New York owned and managed by men of the highest character and responsibility. Those who go to them, instead of falling into the hands of the "copers," need have no trouble.

Employment at Large Salaries.

One of the most prevalent and successful devices of swindlers is to hold out hopes of permanent employment, at large salaries. It is also one of the meanest, for it is designed to reach the class that can least afford to lose money. We have shown up many of these, but here is one in the shape of a "Safe Company," which is sending its circulars—printed in imitation of type-writing—throughout the country. They are accompanied with a catalogue, a certificate of agency, and a formal contract to pay the receiver a salary of $1,500 the first year and $2,000 the second as "manager of the branch office" for the sale of safes. The latter two documents, however, are left blank, and therefore of no present value to the receiver. But, with this alluring bait before his eyes, the receiver is expected to buy a "sample safe," and use his best efforts to obtain orders, with the illusive prospect before him of receiving the appointment and salary held forth in the blank contract. Out of the thousands who have received these papers not one, so far as we can learn, has ever received an appointment, at the salary named.

Pointers.

Every year, about the time the snow begins to fly, new lots of pretended newspapers start up in New York and other large cities. Prospectuses are varied, containing gorgeous offers of "stem-winders," cheap jewelry, and a great variety of other things equally worthless, as premiums. A few issues of the "journal" are printed from old stereotype plates, to make a show; the subscriptions roll in from the too-credulous subscribers; and, finally, the thing stops or is stopped by the United States authorities for abuse of the mails. Look out for them.

The "green-goods" men are still in the field, as is shown by quite a large number of their circulars forwarded to us by our subscribers, by whom they were received. But the exposures of the AMERICAN AGRICULTURIST have made them more shy. Their circulars, though post-marked New York, all ask that replies be sent to Jersey City or Hoboken. One fellow has learned better than to use the mails at all, save for his own circulars, and asks that all communications with him shall be by telegraph.

A bogus medical college has been unearthed, with headquarters at Bennington, Vt., and numerous branches in various parts of the United States and Canada. It sold diplomas at all prices ranging from $30 to $300. The authorities have the operators under arrest.

Animal Ailments.

Ulcers at the Mouth of a Stallion.—Joseph Kirk, Broome Co., Kansas, has a four-year-old Percheron stallion that cost two thousand dollars, who has had ulcers about the mouth and at the root of the tail during the service seasons for the past two years. The ulcers probably are the result of a feverish condition from too high feeding and too little outdoor exercise. A drachm of powdered aloes, with an ounce of powdered gentian, once a day for a week, will be of service. Feed carrots twice a day and oats once during service season, and half an hour's feed at grass daily, will be well.

Warts on Cows' Teats.—M. Woodburn, Oregon, desires to know how to get rid of hard, horny warts on the teats of a cow. The best and quickest method to remove such warts is to cut them off with a pair of sharp scissors and paint two or three times a day for two days the cut surfaces with strong tincture of iodine. The skin and wart should be raised or pinched up between the thumb and forefinger of the left hand so as to cut close to the skin. Care should be taken not to cut the fold of skin, lest an unnecessarily large elliptical wound be made, for the scars or sicatrices thus formed would be nearly as unsightly as the warts.

A Mule Giving Milk.—G. F. Moore, Woodburn, Oregon, has a mare mule that has come to yielding a large quantity of milk, so that to prevent painful distention of bag it is necessary to milk once a day. The animal is healthy, and no cause can be assigned for the unusual flow of milk. Mules being hybrids—half horse and half ass—do not, as a rule, further breed, although some rare exceptions are on record, and it is not impossible that the mule may be in foal. It is an interesting case, and for the sake of science we would like to know the result. Have there been signs of heat? There can be no harm in reducing the flow of milk in any event. Milk out part of the milk twice a day, so as to gradually dry the bag, as should be done in drying up cows at the approaching calving. Feed dry feed, and give only sufficient water to moderately satisfy the wants of the animal.

Stifle Sprain.—W. H. Gynn, Stephenson Co., Ill., has a three-year-old colt with swellings on stifle-joints, for which he consulted a veterinarian, who blistered the parts above the swelling, and applied tincture of iodine. When the swelling became soft, the doctor opened it. From the description of the case we have no doubt that the surgeon treated the case correctly, and we advise Mr. Gynn to follow the directions of the doctor faithfully. It is our province to give the best advice to our patrons possible, and in this case and in all similar ones, we advise reliance on the advice of reputable educated veterinarians in medical and surgical cases of animals. Every veterinarian should read the AMERICAN AGRICULTURIST for information on many matters of interest to them.

Cocked Ankle.—J. H. Sayers, Harper Co., Kansas, has a valuable three-year-old mare whose hind ankles are cocked, or turn forward. The pastern is too straight. The case may be hereditary, or arise from severe strain upon the cords from running upon the hind legs or by jumping. Hot water and hand-rubbing night and morning, with rest, may produce favorable results. An ointment made of a pound of lard and half an ounce of iodine, rubbed in with the hands, should be tried for a week or two. If these methods are not successful, and the condition has not resulted from hereditary transmission from either sire or dam, the next best plan will be to breed the mare to the best sire in your section. For breeding purposes, it pays best always to breed from the best animals. The trouble and reasonable expense in breeding from such animals pays compound interest in the *get*. Of course both size and quality add to the value. Speed is an uncertain factor and is too apt to be expensive. No horses pay so well as good-sized, showy, stylish coach-horses. There is always a demand for such horses at good prices in every part of the world.

Bloody Milk.—H. W. Jordan, Chittenden Co., Vt., states that a young cow gives bloody milk. "The trouble seems to come from first one teat and then from others, the matter and blood coming from only one at a time. Is the milk and butter made from the milk wholesome?" A diseased udder cannot yield a healthy product. The difficulty with the cow comes probably from injury in jumping fences or wallowing in the swampy pasture. The udder should be sponged with very warm water morning and evening, before milking. The cow should have half a pound of glauber salts dissolved in her slop every other evening until the case improves. Then give in some manner an ounce of iodide of potash every evening for a week, and, if not then cured, after one week renew for a week, alternately, in this manner. Tether the cow in a good dry part of the pasture near the rest of the herd, for, if separated, cows worry and do not do well. An ox separated from his fellow has been known to mourn and starve to death, and as this cow is a twin, she would be more sensitive to separation, probably. Treatment of sick animals, like that of sick persons, must be reasonably persevered in to accomplish the best results.

Hog Cholera.—William F. Brazzill, Bon Homme Co., S. Dakota, has lost a large number of hogs with a disease he has so correctly and so graphically described that we can do no better than to use his own description. Here we must remark, that if those who have sick animals would carefully observe the symptoms, and as accurately give them as Mr. Brazzill has done, we could more easily diagnose the diseases referred to, and give the better advice. He writes us: "Two years ago a disease came among my hogs which destroyed over a hundred head. They would lie about upon the belly, would not eat, and the belly was hot and looked as if it had been scalded. They put their noses to the ground and would heave and cough. I had fifty head left and I tried to raise pigs from them, but the pigs though apparently well and healthy when born, soon got sick and more than half of them died. I gave the sick hogs and pigs everything I could hear of but it did no good." The disease was contagious—hog cholera. The only way to have managed was to have slaughtered all the well ones and sold them. To have been sure they were healthy before slaughtering, they should have been separated from the sick herd, and freely fed. The sick ones should have been killed and buried deep under ground, the yard deeply plowed up, and crude carbolic acid diluted with water should have been freely sprinkled in a large sprinkler over the yard, and all the pens thoroughly washed out with this disinfectant. We advise never to breed from any but the best and healthiest animals. In short, make a clean sweep, and begin anew in animals and location.

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You can't help notice how certain firms try hard to copy our advertisements. There's one thing sure, and

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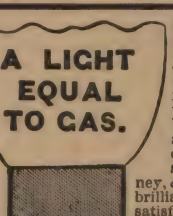

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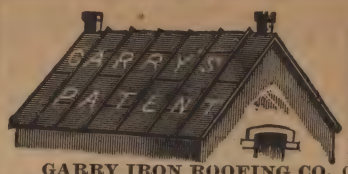

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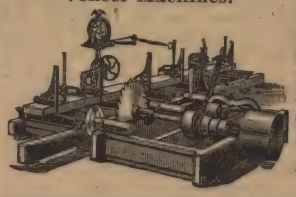

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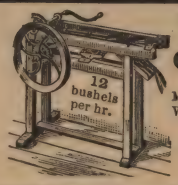

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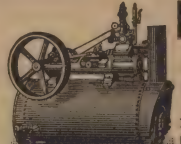

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MARK YOUR TOOLS WITH A STEEL STAMP OR BURNING BRAND. PRICE LIST FREE. J.B. RONEY, LYNN, MASS.

MATTERS OF BUSINESS.

The Completed Harvest.

Corn.—The Department of Agriculture reports the general percentage of the condition of corn in October at 91.7, against 90.9 a month ago, and 92 for the crop of 1888, on the 1st of October. The past month has been favorable for corn. Slight frost north of 40° injured late corn, but the percentage of damage was generally very small, as the crop was well matured on the third week of September. The dry weather came opportunely after the abundant rains of July and August, which somewhat impaired condition on the Atlantic coast. In the States south of Maryland the bottom lands were quite too wet for the best yield or quality. Considerable areas were blown down, and some injury resulted from rotting in all of the Cotton States. In the States of the Ohio Valley there was excess of moisture in May and June that retarded planting and early growth, prevented cultivation, and delayed maturation, leaving some fields to be caught by the frosts of the 20th to the 25th of September. The best development of maize was in the Missouri Valley. The best growth of the South was in the Gulf States. It could scarcely be improved in either district, though the yield per acre is much greater in the higher latitudes.

Potatoes stand at 77.9, against 86.8 last October. They were injured east of the Alleghanies by excess of moisture, causing rot. In West Virginia and Ohio similar reports are received. Drought reduced the yield in Michigan, though the quality is generally good. In the Mississippi Valley the crop is more promising. In the Rocky Mountain region, where the area is largely increased, the season has been unfavorable. Some wild reports have been circulated lately about the extent of this crop, and a greatly misinformed Chicago paper has sent broadcast a statement that the crop will reach 233,000,000 bushels. This is very wide of the mark, and the way in which the figures referred to were arrived at expose the ignorance and unreliability of the estimate. According to the revised reports of the United States Department of Agriculture, which are fully corroborated by the AMERICAN AGRICULTURIST'S special investigations, the area harvested is at least no larger than last season. With the falling off in condition, the crop must be hardly 178,000,000 bushels, at the outside, against 196,000,000 last year, and 134,103,000 bushels in 1887. It is true there is a fair crop in the Provinces, and the West will ship largely, to make up the shortage in the New England and Middle States. Prices, therefore, will be fair and regularly sustained if the crop is carefully marketed.

Wheat Yields.—The returns of yield per acre of wheat are in threshers' measurement. This report is preliminary by the Department, as the local estimates will be tested by the record books of the threshers now coming in. The present averages, for principal State, are 13.8 bushels in New York; in Pennsylvania, 12.3; Ohio, 14.6; Michigan, 14.7; Indiana, 14.7; Illinois, 16; Wisconsin, 14.2; Minnesota, 14.6; Iowa, 13.1; Missouri, 13; Kansas, 18.4; Nebraska, 12; Dakota, 8.3; California, 15. The preliminary average for the whole country is placed at 12.8 bushels, indicating nearly 500,000,000 bushels. Winter wheat was injured, in many districts, during harvest, and in the stack, by heavy rains, and is comparatively light, grading badly, thus reducing its weight and value. Its weight and quality will be the subject of further report, after the test of the scales in marketing. The outlook for an active foreign demand and fair prices is fully as good as two months ago.

The Cotton returns show large plant growth, active opening of bolls, fiber in good condition, and generally fine weather for picking. Yet the plant is everywhere reported late, and fears are expressed that frost may seriously shorten the crop. Condition is naturally reported high, with a reservation by the most intelligent correspondents that present favorable appearances are deceptive; that in seasons of excessive moisture the outcome falls below expectation, while in those of drought the result is better than was feared. With an early date of killing frost the present condition will be heavily discounted; with a date later than the average a large crop will be gathered. Up to October 15th, the prospect favors the fulfillment of the AMERICAN AGRICULTURIST'S prediction of 7,000,000 bales. The crop has been injured more by moisture than drought, though some soils and localities have been too dry in September. Worms have wrought considerable injury, notwithstanding the general use of insecticides, especially west of Alabama. Complaint of adulteration of Paris green is made in certain quarters. The following State percentages are presented: Virginia, 58; North Carolina, 72; South Carolina, 81; Georgia, 87; Florida, 88; Alabama, 87; Mississippi, 79; Louisiana, 83; Texas, 78; Arkansas, 83; Tennessee, 82. This makes, as a general percentage, 81.4 per cent of a full crop prospect on the first of October, compared with 78.9 per cent last October.

Other Crops.—The October condition of Buckwheat is 90, against 92.1 last year. Tobacco has also fallen off to 80.7, against 85.7 in October of 1888. The average yield per acre of Barley is placed at 22.2 bushels, and of Rye at 11.9.

Hints for Profit.

Volumes XI. and XV.—To complete a set of the AMERICAN AGRICULTURIST for our library, we desire to obtain these two volumes. If any of our readers have one or both of these, we would be pleased to have them correspond with us as to the condition the numbers are in, and at what price they would sell them to us. Address the Editor AMERICAN AGRICULTURIST, New York.

The Associated Fanciers, whose advertisements appear occasionally in our columns, are a reputable firm, and should not be confounded with "Bogus Live Stock" concerns that abound throughout the country.

Salting Wheat Land.—Authentic reports show that in some instances the use of Fertilizing Salt, at the rate of 200 pounds per acre, has greatly increased the yield of wheat. It is made and sold by E. S. Fitch, Bay City, Michigan.

A Salary with expenses paid will come handy to any one who is now out of employment, especially where no previous experience is required to get the position. If you want a position, see advertisement on page 564, "A Chance to Make Money."

German Prunes.—We are pleased to learn that Wentz & Co., Rochester, N. Y., are making a specialty of German prunes and medlar trees. The value of these fruits is too little known in the United States. They deserve to be more extensively cultivated than they have been heretofore.

Arms and Camp Equipage.—The wholesale catalogue of Powell & Clement, 180 Main Street, Cincinnati, contains illustrated descriptions of a large line of rifles, shot-guns, cutlery, camp equipage, etc., at prices which are well worthy the attention of all who handle such goods. Send for catalogue to above address.

American Machinery Abroad.—One of the latest triumphs of American skill is that achieved by the Fanning Mills and Dustless Grain Separators of Johnson & Field, Racine, Wis., in Casablanca, Morocco. The British vice-consul at that remote African port, who has used the mills, sends an order for more. The order is accompanied by very high encomiums of the mills.

The "Murray" Buggies and Harness.—The celebrated $55.95 buggies and $5.95 harnesses made by the Wilber H. Murray Manufacturing Company, of Cincinnati, seem to be giving invariable satisfaction wherever they have been introduced. Such a movement for furnishing good articles at low prices makes it very uncomfortable for "trusts" and combines, but very good for purchasers.

A Good Butter-Wrapper.—Good butter must be protected by a good wrapper, if it is to retain its goodness. Elliott's Parchment Paper is a perfect article for this purpose. Costing much less than muslin, it is far superior as a wrapper, as it is absolutely pure, and free from odor or taste; is non-porous, and, therefore, a perfect protector from outside odors. A. G. Elliott & Co., Philadelphia, Pa., are the manufacturers.

Insurance Against Swine Disease.—Dr. Joseph Haas, of Indianapolis, whose Hog Cholera Remedy has been before the public for several years, makes a proposition which shows that he certainly has the courage of his convictions. He offers to insure hogs in lots of 500 or more against death from disease. His financial ability is unquestioned, and it is easy for farmers to avail themselves of the offer by clubbing together.

Economy in Oil.—The Rau Perfection Oil-Can is a very ingenious and effective implement. It works by pressing a thumb-piece, by means of which the required amount of oil is instantly ejected from the spout. When the pressure is removed, the flow ceases, and not the smallest drop can spill or waste, in whatever position the can may be. It is made and sold by the Rau Patent Oil-Can Company, 42 and 44 Michigan street, Chicago.

Mr. Charles V. Mapes, President of the New York Fertilizer and Chemical Exchange, has been unanimously nominated by the Exchange to represent the Fertilizer interests at the World's Fair of 1892. We earnestly hope that this nomination will be confirmed by the appointing committee, as we feel certain that no man is better informed on these subjects, and more capable to represent the fertilizer interests in a deserving manner, than Mr. Mapes.

Preparing Corn for Stock Feed.—The Richmond Cob-Crusher is a cheap, strong, and effective machine, which rapidly, and with little power, crushes corn and cobs to a degree of fineness that fits them to be fed into burr-stone mills, to be ground into meal. It is a saving of power to use such a crusher and a mill, instead of feeding the ears of corn directly to a mill which must both crush and grind. Manufactured by Richmond Mill Works, Richmond, Indiana.

The Famous Gem Organs.—The Gem Piano and Organ Co., of Washington, New Jersey, has been established over forty years, and is one of the oldest and most reliable in the United States. They offer their instruments at wholesale factory prices, and on easy monthly payments. A ten days' test trial of instrument is given in one's own house, and if not found satisfactory all freights are paid, so that no expense is incurred by giving it a trial.

A Comprehensive Chart.—Mr. Roderick H. Smith, 6 Wall Street, N. Y., publishes a little Business Chart, which shows at a glance the course of business in this country for the last thirty years. Zigzag lines in eight different colors show the fluctuations in the price of pig-iron, railroad increase, imports and exports of merchandise, immigration, and other matters of business. It is useful to every business man. Sold by the Orange Judd Co. Price $1.

American Apples Abroad.—Cable advices to Otto G. Mayer & Co., New York, quote the prices of American apples as follows: At Liverpool—Baldwins, $2.68 to $4.87 per barrel; Greenings, $3.16 to $3.65. At Glasgow—Greenings, 3.40 to $3.89; Baldwins, $4.13 to $4.85; Kings, $4.85 to $5.85; Ben Davis, $4.62 to 4.85. Very active demand in both markets for good sound fruit. The shipments to October 5th, 1889, aggregate about 43,000 barrels, against a total of about 175,000 barrels at the same date last year, a difference of 132,000 barrels.

Wall-Paper by Mail.—M. M. Kayser & Co., the great manufacturers of wall-paper, 406 to 410 Arch street, Philadelphia, announce that upon receipt of eight cents, to cover the cost of postage and packing, they will send by mail a full line of samples of their paper-hangings. Should the receiver purchase, the eight cents is credited on the first order. Some of their paper is as low as five cents per piece, and their gold paper is a wonderfully fine article for the price. The plan adopted by them brings one of the largest wall-paper factories in the country at the door of every one.

Honors to an American Inventor.—Mr Walter A. Wood, of Hoosac Falls, N. Y., has won distinguished success at the French Exposition. He has received a special grand prize, and also the highest awards for each class of his machines submitted for trial. Of these his reaper and mower were awarded gold medals and his binder an object of art. While the machines of his invention have achieved these triumphs, Mr. Wood has been made the recipient of many personal distinctions. He has received decorations as an officer of the Legion of Honor of France, and of the "Order of the Emperor Francis Joseph" of Austria.

Cheap Heat.—With all kinds of heating apparatus there is a great loss of heat, which escapes up the chimney. This loss is plainly perceptible to any one who will hold his hand immediately above a flue in the top of a chimney beneath which a stove or fireplace is in operation. To arrest this waste heat, and radiate it into the rooms of the house, is the work of the Wolcott Heat-Trap and Radiator. It is very simple, cheap, and effective; and may be applied directly to the stove, or set up in rooms above. Practically it saves all the heat, doubling the potency of the fuel, without extra labor. George E. Harris, 108 Lake Street, Chicago, is the general agent.

The Jay-Eye-See Bit.—No invention in horse equipments has been made in this country so conducive of comfort for the horse, and safety for the driver, as the Jay-Eye-See bit, made by the Racine Malleable and Wrought Iron Co., of Racine, Wis. It is not a savage instrument of torture, cutting and tearing the horse's mouth, but a straight bit, resting easily in the mouth while the horse is going along, and, in case of need, gripping it with a force which will quickly induce him to let go his hold upon the bit, when it at once relaxes. The bits are made in different forms—for driving, for stallions, and for riding—and finished in various styles.

A Charming Winter Home.—With the rapidly-increasing facilities for winter travel, the attractions of Middle Georgia are becoming more and better known, and a pressing need for good hotel accommodations has become apparent. To supply these wants a few enterprising and public-spirited citizens of Augusta have this year erected a magnificent structure, the Hotel Bon Air, in a most delightful and beautiful location near that city. The climate and its salubrity, situation, the hotel itself, with its excellent appointments and beautiful surroundings—everything, in fact, combines to make this establishment an ideal winter resort, as we know from personal observation.

"The Chautauqua Idea."—In the history of education there is nothing more marvelous than the rapid growth and wide extent of the Chautauqua movement. From a brief summer school, on the picturesque shores of Lake Chautauqua, it has grown to a system of self-education, extending around the world, and all through the year. For those whose educational advantages have been limited, it offers a four-years' course of home study, which embraces the outline of a collegiate course; the college graduate may review his studies; and for all within the circle it promotes habits of systematic reading and study in literature, art, and natural science. The office of the Chancellor has been removed from Plainfield, N. J., to 455 Franklin street, Buffalo, N. Y.

New Triumphs.—The Whitman Hay and Straw Press,

made by the Whitman Agricultural Co., of St. Louis, after a trial of three days at Noiselle, near Paris, was awarded the grand prize and object of art, by the grand awarding jury of the Paris exposition. In the competition were ten presses, from French, English, Austrian, and German makers. A later cablegram announces that the Ministry of Agriculture of the French Government has also awarded the Whitman Press a special gold medal on field trial, for great superiority. It was also awarded the grand gold medal at the international trial of presses at Turin, Italy, this season. This conclusively shows that America is at the head and front of agricultural inventions, at least, in competition with the world.

The Bird Market.—It is a difficult matter to regulate the bird market, but the average prices range as follows: Fine male canaries, with good strong voice, range from $2 up to $10. Females from 50 cents to $1. They are mostly of the Hartz mountain variety. The mocking birds command high prices, from $10 up to as high as $100. Hand-raised birds are better than trapped ones. Virginia, North and South Carolina, Louisiana and other Southern States furnish the birds in markets. The bullfinch, when rightly trained, makes a valuable bird, prices running as high as $40. Goldfinches, chaffinches, nightingales, larks, linnets and thrushes, are all prized as cage birds and songsters, and cost very little. Parrots command quite a trade, the gray African bird bringing as high as $100. Young birds range from $10 upwards. Australian paroquets run as high as $10 each.

New Ways of Exporting Tobacco.—Several of the tobacco journals receive with favor the suggestion that American growers could get better prices for their tobacco in exporting by pooling it and selling by inscription or auction as the Dutch do with the Sumatra. In this latter case the tobacco is sent from Sumatra and South Africa to Amsterdam, and sold by auction, in lots, and on dates fixed by the syndicate there. In this way the highest price is obtained after keen competition. The plan set forth for the American growers is, for those of each district to pool their tobacco and authorize agents or warehouse men to sell it, or for the growers to sell their tobacco to shippers, who would place it on the market in the manner most advantageous to secure a good attendance of buyers, then fix certain dates for the inscription sales, say of certain grades, notifying the foreign regies of the dates and grades. A western tobacco journal cites the case of a large lot of low-grade tobacco sold to Spain by a New York firm, who obtained prices for it that would not have been obtained had it been in the hands of its various owners, and, in fact, would not have been sold otherwise.

Contents of This Number.

Holstein-Friesian Cattle.

Bred for Milk and Butter.
Value Determined by Actual Tests.
Cows with Large Milk and Butter Records.

Heifers and Calves, rare in quality, with pedigrees rich in milk and butter, on side of both sire and dam. **A grand lot of Butter Bred Bulls,** that in quality or breeding based on production of ancestry, has no equal. 160 animals from this herd in advanced registry. Send for catalogue, giving pedigrees and records of this wonderful herd. In writing mention this paper.

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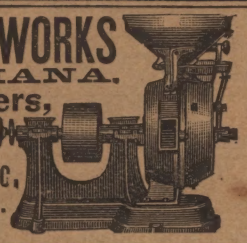
RICHMOND, INDIANA.

Corn and Cob Crushers,
FRENCH BURR MILLS,
PULLEYS, SHAFTING, BELTS, etc.



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GRINDS EAR CORN SHUCKS ON OR OFF, and all small Grains, in fact everything which can possibly be utilized for feed. Has **SAFETY BOTTOM** and other practical devices, to prevent breakage should iron accidentally get into Mill. **GRINDING PLATES** reversible, self-sharpening, double the capacity of all others. Sold on trial. All mills fully guaranteed. Send for catalogue.

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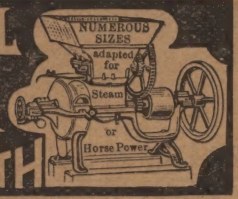

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Outfits Complete for Cheese Factory or Creamery. Estimates and Plans **Free. ONE RECTANGULAR CHURN AND LEVER BUTTER WORKER at wholesale,** where we have no agents. Write for circulars or anything pertaining to Butter and Cheese making. **Cornish, Curtis & Greene, Fort Atkinson, Wis.**

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For Corn and Cobs, Feed and Table Meal. Grinds **finer, runs lighter, is more durable** than any mill on the market. Send for Catalogue before buying.

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GRINDS ALL KINDS OF GRAIN including **EAR CORN** and **FURNISHES POWER** to run a Feed Cutter, Wood Saw, &c. at the same time. Catalogues showing a full line of Sweep and Belt Power Feed Mills, Corn Shellers, Feed Cutters, Horse Powers, &c., *free* by mentioning this paper.

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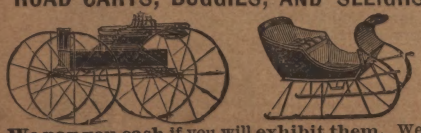

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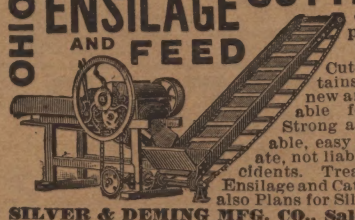

Our Improved **1889** Cutter contains many new and valuable features. Strong and durable, easy to operate, not liable to accidents. Treatise on Ensilage and Catalogue, also Plans for Silo, Free.

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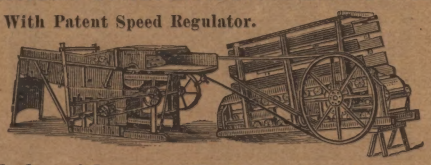
Heebners' Patent Level-Tread Horse-Powers

With Patent Speed Regulator.



Heebners' Improved Threshing Machine, Fodder Cutters, Corn Shellers, Wood-Saws, Field Rollers. Extraordinary success with latest improvements. **Catalogues Free.** **HEEBNER & SONS,** Lansdale, Pa.

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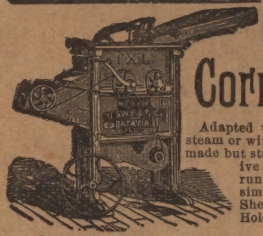
240 LB SCALE 500 lb Platform, $10; 1000 lb $15; 1500 lb $20; 3¼ ton Wagon Scale, $40; 5 ton, $50. **List $3.00 FREE.** Am. Farm Scale Co., Chicago, Ill.

EVERY FARMER HIS OWN MILLER DO YOUR OWN

Shelling and Grinding at home, saving tolls and teaming to and from the Grist Mill. This work can be done rainy, windy days when out-door work is suspended on the farm. The same Mill will cut corn & stalks, saw wood, run churn, grindstone, pump water, etc. **We make the HALLADAY Geared Wind Mill in 11 sizes, 1½ to 40 horse power, and GUARANTEE they have no equal for Power, Durability and Storm Defying qualities.**

34 Years Experience.

IXL 2-HOLE Corn Sheller



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made in 5 Sizes, with Safety Fly-Wheel, Safety Lever, and all late improvements.

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3 sizes, both Belt and Geared Mills. Can be run by any power and especially adapted to Wind Power. Will grind any kind of grain and is the lightest running and most effective Feed Grinder made.

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Both Swinging and Sliding Tables. We make a Saw Table especially adapted to sawing long poles. Special care is taken to make these machines strong and durable.

IXL TANK HEATER

for warming water in Stock Tanks. Made of the best quality of iron cast in one piece, no sheet iron to rust or solder to melt and cause leak. Will burn any kind of fuel. It is very effective and takes less care to operate than any other Heater made.

We also make the HALLADAY PUMPING WIND MILLS. 13 sizes, 8 to 60 ft. diameter and 1 man to 40 horse power. The U. S. SOLID WHEEL WIND MILL, 7 sizes, Iron and Brass Pumps in great variety. Tanks, all kinds and sizes, and the Standard Hay Tools, consisting of Anti-Friction, Swivel, Reversible and Rod Hay Carriers, Harpoon and Grapple Horse Hay Forks, Pulleys, Floor Hooks, etc. All goods fully guaranteed. Send for Catalogue and Prices. Reliable Agents wanted in all unassigned Territory.

U. S. WIND ENGINE & PUMP CO.

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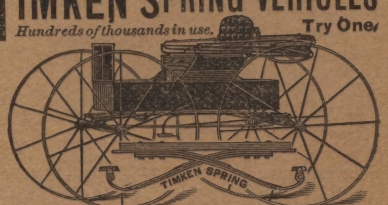

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